Australasian Railway Association

31 May 2024

Dr Kerry Schott AO
Chair, Independent Advisory Panel
NSW Freight Policy Reform Program

Dear Dr Schott

ARA Submission – NSW Freight Policy Reform Program

On behalf of the Australasian Railway Association (ARA), I am pleased to provide you our submission to the Consultation Paper for the NSW Freight Policy Reform Program. This submission has been developed in close consultation with the ARA's rail freight members and stakeholders, including the Freight on Rail Group (FORG), to ensure it is truly representative of the views of the collective rail freight industry.

As you are aware, the Australasian Railway Association (ARA) is the peak industry body for rail in Australia and New Zealand, representing over 230 heavy and light rail operators in passenger and freight, infrastructure owners and managers, manufacturers, and suppliers of rolling stock (trains), contractors who build the infrastructure, and consultants. Our members include listed and private companies, government agencies, and franchisees.

Our members are driven to support vibrant, sustainable and connected communities through greater use of rail across Australia and New Zealand. We bring together industry and government to help achieve this ambition. Our advocacy is informed by an extensive research program to ensure we offer solutions that are grounded in evidence and focused on delivering tangible value to the Australian economy and the communities we serve.

The ARA believes this comprehensive review of freight policy in NSW is critical to ensuring reforms are implemented that enable the freight sector to be more productive, efficient, and sustainable. This is particularly important for rail freight, which can play a much greater role in moving Australia's growing freight task. We must implement practical policy reforms that remove the productivity and efficiency barriers that are preventing more freight moving on rail. Unlocking a larger freight mode shift onto rail will ease pressure on our congested road network and deliver significant safety and environmental benefits, as well as enabling better utilisation of transport infrastructure and creating a more efficient overall freight system.

I would like to thank Transport for NSW and the Independent Advisory Panel for the opportunity to provide this submission. Should you have any questions regarding the submission or wish to discuss anything further, please contact me via [redacted]

Yours sincerely

[redacted]

Australasian Railway Association

NSW Freight Policy Submission

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ABN: 64 217 302 489

FREIGHT ON RAIL GROUP

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Executive summary

The Australasian Railway Association (ARA) is the peak body for the rail sector in Australia and New Zealand, and advocates for more than 240 member organisations across the industry. This submission has also been developed with the Freight on Rail Group (FORG) of Australia, a freight rail industry group representing nine major rail freight businesses.

This submission has been prepared to inform the current review of the NSW Government's freight strategy. The rail freight sector is optimistic about the opportunity this review represents to realise the environmental, community, safety and transport benefits that rail freight can deliver for NSW and Australia.

Current share of the NSW freight task on rail is high when considering mining and agricultural bulk exports, but modest across contestable freight markets including containerised freight – see section pages 14-17 for assessments on current rail freight mode share. For this reason, this submission focuses on the challenges and opportunities to drive rail freight mode share of contestable freight.

The benefits of securing a greater proportion of freight on rail are well documented and understood – see pages 11-14. However, over the past 10 years, there have been no policies, interventions, incentives or coordination actions which have materially improved the efficiency, productivity or competitiveness of rail freight services across NSW, and thus rail freight has continued to lose share as a proportion of total freight in transit (noting this still represents a growth in total volumes over time).

What has been less well understood over time are the challenges which undermine the reliability, cycle time, price and overall efficiency which informs freight customer decision-making. Independently and comprehensively investigating these challenges and solutions to address them was the focus of the industry-led 2023 Future of Freight Report, from which this submission draws extensively.

Relying on this contemporary analysis of problems and solutions, the recommendations advanced below primarily focus on addressing the underlying causes of low rail freight mode share in contestable freight.

Summary of recommendations

Noting the extensive and detailed discussion paper, for what we see as such a critical policy to the future of NSW, this detailed submission has been developed drawing on industry intelligence and consultation, contemporary research from the industry-led 2023 Future of Freight Report and case studies.

To make the output more accessible for the Independent Panel and Transport for NSW (TfNSW) staff, an overview which focuses on the key actions being recommended by the rail freight sector has been prepared, with more extensive supporting evidence attached.

The following table provides an overview of the recommendations which the rail freight industry believes, if implemented, will directly contribute to achieving a higher rail mode share across NSW, support the efficiency, productivity and competitiveness of rail freight services, help position rail to thrive as an important part of NSW and national supply chains, and help mitigate

risks which could impact the rail freight sector over coming years. Each recommendation is supported by considered evidence, commentary and case studies in the sections attached.

Given the market conditions and prevailing economic climate impacting Australian governments, the recommendations seek to focus on opportunities to improve the quality, resilience and connectedness of NSW and national supply chains through policy and coordination in the main, and without a focus on the need for major infrastructure investments.

Rail freight in Australia is considerably constrained by the differences which exist between jurisdictions and intra-state networks. A lack of interoperability across the country is the single most significant drain on productivity for the rail freight sector, directly contributes to the cost of operating rail freight services, reduces operational efficiency and flexibility, dampens the uptake of new technology and pace of innovation, and ultimately hampers the ability to compete with other transport modes. Many of the challenges which could be classed as 'interoperability' challenges can be addressed without significant outlay of resources through better alignment and coordination of NSW state agencies and contracted service providers.

The table below seeks to provide an indication of the likely costs to the NSW Government and its agencies from a given recommendation, as well as a rating on the likely contribution to increasing rail freight mode share.[1]

Recommendation	Page #	Discussion paper prompt question/s	Cost implications	Impact on rail freight mode share
STRATEGY & INDUSTRY ENGAGEMENT				
Rail freight target - Reinstate a NSW Government goal of 30% of contestable freight volumes being moved throughout the state on rail, as a total proportion of volume in transit, as a feature of the updated policy and develop specific actions to achieve it.	13	1, 2	$	High
Bureau of Freight Statistics Commitment - Reinstate resources to implement the commitment from the 2018 Plan to develop a NSW Bureau of Freight Statistics (BFS) which was seemingly abandoned without industry consultation at some time since 2018.	14	1, 2, 7	$	Medium
Data sharing - Rail Infrastructure Managers (with the support of rail operators) should commit to regularly provide BITRE and the National Freight Data Hub with rail freight datasets, that are relevant to informing transport policy decisions, including freight volumes, freight types (to the extent ascertainable) and origin-destination (with the recent Memorandum of Understanding between BITRE and ARTC providing a template for this data collection).	14	1, 2, 7	$	Medium

[1] Note – in cases where the impact rating has been assessed as low, we are advancing this recommendation due to the obvious safety, environmental or other social benefits.

National rail interoperability - Prioritise resources within TfNSW and associated public service entities to drive implementation of national commitments to deliver rail system interoperability across NSW assets (track, signalling and associated infrastructure) and pursue change or coordination where required to deliver interoperable operating conditions (safeworking rules, training requirements, rollingstock approval and testing requirements etc.).	18	1, 2	$$	High
Strategy governance - Leadership of TfNSW manage a regular forum attended by the Rail Operators Group, all RIMs, Freight Branch and industry representatives to establish executive-level focus on the implementation of the forthcoming state freight policy, managing operational difficulties and advancing harmonisation initiatives recommended throughout this submission, including production of 6 monthly reports to Ministers and published online against strategy KPIs.	18	2, 7	$	High
POLICY & REGULATORY SETTINGS				
Metropolitan network sharing - NSW Government accept and action PBLIS Review Recommendation 20 including establishing a public Freight Level of Service (FLOS) for the shared metropolitan passenger/freight network, and recommendation 21 including unified train planning & standard train lengths which will each assist with improving efficiency across the metropolitan shared network. This should be supported by develop of a clear and transparent definition of "passenger priority".	22	1, 2	$$	High
Intra-state interoperability and coordination - Prioritise the introduction of centralised guidance across all NSW agencies (and in line with progress to achieve this nationally) that promote safety and productivity gains through operational harmonisation and work to identify the specific actions required to address high priority harmonisation related constraints, including actions agreed to under the National Rail Action Plan and other regulatory reviews.	22	1, 2	$$	High
Public reporting on rail freight performance - Require all NSW agencies (including the Environmental Protection Agency) impacting rail freight policy to report every 6-months to Ministers and publish reports on freight performance metrics and how it has supported the delivery of the renewed freight strategy.	22	1, 2, 7	$	High
Rail freight service coordination - Commission an investigation into the most effective rail freight coordination model to optimise the efficient movement of rail freight across the multiple rail networks in NSW.	24	1, 2	$$	High
Freight SLAs on the MRN - Review passenger priority access arrangements to resolve a more flexible and transparent approach to managing network access across passenger and freight services, supported by the signing of Service Level Agreements between Sydney Trains and rail freight operators.	28	1, 2	$$	High

Land zoning - Retain existing industrial land and expand supply through rezoning and servicing of additional land. Existing industrial land (including in urban areas) should not be rezoned for other uses.	28	1, 2, 6	$	Low
Division of industrial lands - Prevent the subdivision of large parcels of industrial land into small lots unsuitable for freight, logistics and industrial activities and encourage the consolidation of small industrial lots into larger land parcels.	28	1, 6	$	Medium
Planning policies to support freight - Optimise the use of industrial lands and avoid constraints from urban encroachment by: improving the planning approvals process; improving design standards of residential developments in urban areas; and creating buffer zones to minimise impacts on communities.	28	1, 6	$$	Medium
Western Sydney Freight Line Business Case - Complete the Western Sydney Freight Line Business Case, and if favourable, vigorously pursue state and federal funding to build it.	29	1, 6	$$	High
Planning for further urbanisation - The NSW Government must consider how the competing demands of passenger and freight rail will be provided for over time, and how the state can successfully balance urban densification with the need to increase transport capacity for both freight and passenger services of all modes in urban areas while protecting rail freight capacity on the shared network.	29	1, 6	$$	Medium
Assess long-term network capacity requirements - Consistent with the 2019 National Rail Action Plan, the NSW Government should lead action amongst state and federal peers to coordinate assessment of long-term network capacity requirements, and the extent to which this may require additional rail corridors (including freight only corridors in urban areas) beyond those for which corridor preservation is complete or underway.	29	1, 6	$$	Medium
Freight stakeholder consultation on planning - TfNSW to utilise freight stakeholder relationships to ensure planning decisions involve timely and appropriate open consultation with the freight sector.	29	7	$	Medium
Long-term network optimisation - Commission a strategic business case to consider the opportunities to leverage existing rail infrastructure over coming decades to deliver better network performance and capacity and identify what connections or upgrades would be of greatest value to realise these opportunities.	30	1, 2	$$	High
Incentivise rail freight - Consider options to utilise rail freight to support empty container management, including analysis of the Port Botany Regional Rail Customer Incentive Scheme.	31	1, 2	$$	Medium
Re-consider road-user charging policy - Policymakers should re-consider the benefits of Mass Distance Charging in	31	2, 4	$$	Medium

relation to setting road user prices on a basis that are able to better reflect full cost recovery, including sunk capital and externalities.				
Deregulate stevedore rail servicing - Accept PBLIS Review Recommendation 19 and remove the regulation of stevedore rail servicing arrangements to allow stevedores to set charges and service terms as appropriate.	32	2, 3	$	Medium
Reform rail type approval - Conclude the trial of standardised type approval underway in partnership with DTP Vic, share learnings with industry, and consider ways to accelerate progress on type approval harmonisation within NSW, and across jurisdictions and RIMs.	33	1, 2, 5	$	Medium
Adopt national local content policies - Adopt a holistic, national approach to the application of local content policies in procurement requirements, evaluation, compliance, and auditing processes.	34	1, 2	$	Low
Support a national pre-qualification scheme - Support the expansion of the Austroads national pre-qualification scheme to incorporate rail infrastructure projects and participate in the development and roll out of the expanded scheme supported by a national online portal.	34	1, 2	$	Low
Implement Project iTRACE - Implement Project iTRACE by preparing, sharing and maintaining material master data in a digital format, and ensuring you and your suppliers are marking components with GS1 barcode standards.	35	1, 2	$	Medium
INFRASTRUCTURE AND PLANNING				
Performance reporting - To better understand and monitor the reasons for late running of trains, RIMs and rail operators TfNSW should develop standard reporting metrics to monitor network and fleet performance and proactively agree strategies to address challenges identified.	37	1, 2	$	High
Signalling harmonisation - TfNSW prioritise work with ARTC and across local RIMs to development a technical solution for interface between ATMS and ETCS.	37	1, 2	$$$	High
Integrated automated scheduling - Commitment by all NSW RIMs and ARTC to the development of an integrated automated scheduling system across the entire intermodal network, including development of a technical solution to interface between individual RIM automated scheduling systems and capturing regional networks significantly interacting with the interstate network.	37	1, 2	$$$	High
Investigate resource distribution - That Infrastructure NSW be commissioned to investigate the policy and capital distribution between road and rail, considering the commitment of infrastructure investment, other state resources and capability across the NSW public service and make recommendations to equalise distribution of resources.	38	1, 2, 4	$	Medium

Maldon-Dombarton Business Case - The NSW Government should fund a Strategic Business Case for completion of the partially-constructed 35 kilometre rail link between the Main South Line at Maldon and the Moss Vale-Unanderra Line at Dombarton (Maldon-Dombarton line) which fully investigates all the potential benefits of a dual purpose rail line.	**39**	1, 2	$$	Medium
Public rail investment pipeline - In the absence of a national coordinating body, state governments should regularly review and re-publish their rail investment pipelines, as well as committing to the priority project recommendations of Infrastructure Australia.	40	1, 2	$	Low
New CBA framework - Infrastructure NSW develop a new standard template for the development of Cost Benefit Analysis (CBA) framework for road and rail infrastructure proposals which appropriately accounts for externalities to be used across NSW agencies.	40	2	$	Medium
Network resilience planning - The rail freight sector urges the NSW Government to invest in similar hydrological modelling and network planning to identify key vulnerabilities and provide funding for upgrades and opportunities to 'build-back-better' to RIMs outside of BAU revenue streams and network maintenance.	42	2	$$	High
Level crossing safety compliance - Align priorities of regional highway patrol authorities to treat level crossing risks seriously, and create a dedicated reporting mechanism for rail freight operators to report incidents and near misses for compliance action. This should be complemented by greater use of mobile technologies for enforcement, reducing the burden on police.	43	2, 4	$	Low
Inactive LX signage - Fund Rail Infrastructure Managers to invest in a proactive program to replace all signage at level crossings on closed rail lines with fit-for-purpose signage and develop a streamlined process for the formal and public closure of crossings not in use.	43	2, 4	$	**Low**
Consider LXs in PBS approvals - Review local, state and national roads which can appropriately accommodate heavy vehicles of different types (based on weight and stopping speed primarily) considering the number and type of level crossings to inform the NHVR PBS approvals and permits.	43	2, 4	$	Low
WORKFORCE DEVELOPMENT				
Industry/TAFE partnership - Work with TAFE NSW and the ARA to develop an industry partnership model with the TAFE sector to play a greater ongoing role in training the rail workforce of tomorrow and providing pathways to enter the industry for candidates not already employed in industry.	**45**	1, 2	$$	Medium
University course development - NSW Government work with NSW Universities to encourage development of undergraduate and postgraduate rail engineering units to	**45**	1, 2	$	**Medium**

encourage civil, mechanical, electrical and chemical engineering students to seek employment in rail.				
National competency management - Require RIMs to adopt full use of national competency matrices and recognised national curriculum for employees and private RTOs.	45	1, 2	$	Low
Reform ANZCO codes - Support reform of ANZCO codes, used to identify critical skills shortages and align Commonwealth policy, to include more rail jobs, including locomotive driver.	46	1, 2	$	Low
DECARBONISATION				
National decarbonisation planning - NSW contribute to the development of a shared national approach for governments and industry to support the decarbonisation of rail freight operations.	47	2, 5	$$	High
Renewable energy access for rail - NSW explores opportunities to develop renewable energy infrastructure along rail freight corridors to ensure certainty of supply for the industry and deliver co-benefits to communities.	48	2, 5	$$$	Medium
Harmonise environmental regulation - Consider opportunities to advance harmonisation of environmental regulation as it relates to rail freight across jurisdictions, ensure it is adequately informed by expert knowledge of the rail freight industry and appropriately considers the negative externalities of regulatory responses to poor performance.	49	2, 5	$	Low
Integrate environmental regulation into freight policy - Alongside improved efficiency, decarbonisation and infrastructure resilience, incentivisation programs should consider measures that support a reduction in environmental externalities (e.g. clean air and noise). In NSW these elements are highly regulated, punitive and generally considered in isolation from the broader benefits associated with increasing rail mode share.	50	2, 5	$	Medium

EVIDENCE

Background

Industry representation

The Australasian Railway Association (ARA) is the peak body for the rail sector in Australia and New Zealand, and advocates for more than 240 member organisations across the industry. The ARA's freight membership encompasses rail freight operators, rail infrastructure managers (RIMs), ports, terminal operators and other businesses in the sector. Freight member organisations include OneRail Australia, Pacific National, Australian Rail Track Corporation (ARTC), Arc Infrastructure, Queensland Rail, TasRail, National Intermodal Company, Victrack, VLine, NSW Transport Asset Holding Entity (TAHE), Port of Brisbane, Port of Melbourne, NSW Ports, Manildra Group, Rail First Asset Management, Queensland Transport and Logistics Council, as well as state transport departments.

This submission has also been developed with the Freight on Rail Group (FORG) of Australia, a freight rail industry group representing nine major rail freight businesses: Pacific National, ARTC, One Rail Australia, Aurizon, Qube Holdings, SCT Logistics, Arc Infrastructure, Watco Australia and Southern Shorthaul Railroad (SSR). This collaboration ensures that the following submission represents the view of the collective rail freight industry.

This submission has been prepared to inform the current review of the NSW Government's freight strategy. The current strategy, developed in 2013 and accompanying implementation plan in 2018, sought to position the state as a leader in freight and logistics. However, over the past 10 years, the agencies responsible for delivering on the plan have failed to deliver on many of the rail-related initiatives or developed specific policies or actions to deliver on its goals.

The rail freight sector is optimistic about the opportunity this review represents to realise the environmental, community, safety and transport benefits that rail freight can deliver for NSW and Australia.

Why rail freight

The NSW Government, along with the federal and other state governments, have long held an explicit public policy objective to increase the share of the large and rapidly growing freight task which is transported by rail. However, strategies intended to achieve this were often not supported by meaningful actions, policies and incentives, and those which were committed to over recent years have largely failed to be delivered. The proportion of freight by volume being transported for export through Port Botany has been declining over recent years, though noting that with an overall increase in volumes, there has still be growth in total volumes on rail. Overall, rail freight's share of intermodal and interstate containerised freight has been in decline across all markets nationally for many years.

Rail freight is critical for the Australian economy, directly contributing $5.28 billion to the economy in 2019 and enabling the smooth running of modern supply chains. Rail freight carries the majority of Australia's freight task by net tonne kilometres (tkm) and does so while being the lowest emitting freight mode per tonne in CO2 equivalent and PM10. However, rail freight in Australia is predominately made up of bulk commodities such as coal, grain and in particular iron ore.

In practice, prices paid by individual freight transporters do not necessarily reflect the actual costs incurred by freight activities. These unpaid costs or externalities are usually paid for by society.

Environmental benefits - Rail accounts for over half of land-based freight transport. Even though road moves less goods by tkm, at the time of last analysis in 2019, road freight generated almost nine times as much CO2 equivalent emissions as rail freight.[2] When directly compared, rail freight produces 16 times less carbon pollution than road freight per tkm travelled. A 1% modal shift away from road to rail, this would result in reduction in emissions nationally of 330,150 tonnes of CO2 equivalent.

More detailed information is also offered below on the ambitious work underway within Australia, and with global partners, to move away from reliance on diesel and decarbonise above rail freight operations using alternative fuel types including batteries, electrification, hydrogen and ammonia.

Safety benefits - Road accident costs are 20 times higher than rail for every tkm of freight moved. Based on ARA analysis, the annual total crash costs for road freight in Australia is estimated to cost over $3,000 million compared to the $282 million for rail freight.[3] A 1% shift away from road to rail would reduce accident costs nationally by $28.6 million per year.

Further, NSW has a Towards Zero objective, yet the instances of road trauma are increasing. The opportunity to transfer volume to rail could help address the increasing number of heavy vehicle incidents which appear to continue to be rising in line with the growth in heavy vehicle permits, despite the arguments made about the introduction of new and higher-productivity vehicles being predicated on safety.

Health benefits - Transport is one of the main contributors to air pollution in dense cities, resulting in negative health outcomes. Particulate matter causes breathing difficulties and exacerbates respiratory diseases, ultimately this leads to lower quality of life and reduced lifespans. Rail freight generates 92 per cent less PM10 than road freight for each tkm of freight moved.[4] A 1% modal shift away from road would result in reduction in health costs caused by PM10 emissions nationally by $20.5 million annually.

[2] Value of Rail 2020, ARA, https://ara.net.au/wp-content/uploads/REPORT-ValueofRail2020-1.pdf, P.50.
[3] P.52.
[4] P.54.

Overall, a 1% shift of freight moved from road to rail will reduce accident, emission and health costs nationally by $71.9 million a year.[5]

Rail Safety

The rail industry is proud to have a reputation as maintaining extremely high safety standards for employees, passengers and the public. When thinking about freight specifically, rail compares very favourably to road-based freight transport. Physical separation from the public in a well-controlled corridor eliminates many of the risks present when navigating public roads.

The co-regulatory model used to manage risk in the rail sector has been successful at engendering a culture of continuous improvement and fostered innovative solutions to be developed for risks and hazards at a local level. The creation of the Rail Safety National Law (RSNL) was a significant step forward towards building a truly national rail sector, and provides a platform to drive harmonisation which has the potential to deliver considerable benefits to industry efficiency, productivity and workforce.

Rail businesses demonstrate a strong ongoing commitment to investment in technology, processes and systems, and incident reviews and investigations to improve the overall safety of operations. Overall, we have seen consistent effort applied to removal of people from areas of high risk over recent decades, with technology facilitating remote operations for key aspects of equipment, maintenance and control, from a few metres away to many hundreds of kilometres. Automation and data intelligence is creating new opportunities to reduce risk to human safety and build systems that respond to changes in real time.

The one key challenge for industry posed by the co-regulatory model, is the latitude it has provided for RIMs in particular, but also other key players in the sector, to develop bespoke solutions and management approaches to risk which do not necessarily align with neighbouring networks. This has exacerbated the challenges created by network fragmentation and we have yet to see success from efforts towards voluntary harmonisation to date.

Encouragingly, a current review of the RSNL underway by the National Transport Commission (NTC) presents an opportunity to amend the law to strengthen the link between safety and productivity and drive interoperability and harmonisation. The rail freight sector is extremely supportive of an expanded scope for the Office of the Nation Rail Safety Regulator (ONRSR) in this regard.

It is for all these reasons that we argue that the NSW Government and its agencies should not adopt a ‘mode agnostic’ position, but instead openly pursue measures to achieve a much greater proportion of the future freight task being managed on rail. It is also important to note, that when considering end-to-end freight journeys, rail can rarely provide door-to-door solutions and so road transport providers are critical partners.

Recommendation: Reinstate a NSW Government goal of 30% of contestable freight volumes being moved throughout the state on rail, as a total proportion of volume in transit, as a feature of the updated policy and develop specific actions to achieve it.

[5] Op. cit., P.55.

Current rail freight mode share

The current scale of rail freight's contribution to the NSW (and national) freight task is not well understood.[6] This is largely due to fragmented information sources which are not regularly aggregated and analysed as well as reluctance to provide detailed operational data by freight operators who compete in a highly concentrated national market. Resolving these commercial constraints is the subject of work being led by the ARA with rail freight operators and key stakeholders, but sources of intelligence already held by the NSW Government through its agencies and contracted RIMs should be better utilised in a systematic way to engender a better understanding of the scope, scale, and challenges of rail freight operations.

> **Recommendation: Reinstate resources to implement the commitment from the 2018 Plan to develop an NSW Bureau of Freight Statistics (BFS) which was seemingly abandoned without industry consultation at some time since 2018.**
>
> **Recommendation: Rail Infrastructure Managers (with the support of rail operators) should commit to regularly provide BITRE and the National Freight Data Hub with rail freight datasets, that are relevant to informing transport policy decisions, including freight volumes, freight types (to the extent ascertainable) and origin-destination (with the recent Memorandum of Understanding between BITRE and ARTC providing a template for this data collection).**

Having identified the challenging landscape for rail freight data in NSW, we offer the below national insights.

Formulating public policy which can positively impact the mode share of rail freight has been made more difficult by the lack of:

- high-quality, evidence-based information available on the current state of the Australian rail freight sector;
- a comprehensive assessment of the challenges which constrain the effectiveness, competitiveness and productivity of rail freight operations; and
- industry consensus on the solutions to these barriers.

To address this, the ARA, FORG and Australian Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) invested in a comprehensive piece of research managed by the Australian Centre for Rail Innovation (ACRI, now part of the National Transport Research Organisation (NTRO)) and conducted by Synergies Economic Consulting. The final report was publicly released with the support of the Hon Minister for Transport and Infrastructure, Catherine King and key industry leaders in November 2023.

The resulting Future of Freight report represents a comprehensive analysis of the causes of constraints on rail freight effectiveness, competitiveness and productivity and makes significant recommendations on how industry and government can work together to support a stronger rail freight network and harness the significant benefits rail freight has to offer for the economy and community.

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[6] See pages 14-17 of Mode Share workstream Executive Summary, Future of Freight for detailed analysis of information gaps re rail freight, https://ara.net.au/wp-content/uploads/Future-of-Freight-Improving-modal-share-1.pdf.

The first section of the report considering mode share offers detailed information based on contemporary data on the structural conditions influencing mode share on key freight corridors (intermodal and bulk routes) of significance to national supply chains. The relevant findings are summarised below.

Rail is a vital part of the freight network and facilitates 56 per cent of the national freight task. While rail is a significant contributor to the transport of bulk commodities that require large volumes to be moved over long distances, its mode share is lower on key interstate freight routes, especially between Melbourne, Sydney and Brisbane.

This research revealed that rail's share of freight is only 11 per cent across the eastern seaboard, and as little as two per cent on Australia's busiest freight corridor between Melbourne and Sydney. Estimates of current mode share for the freight routes included in this study are set out in the following table. Those corridors where rail dominates are highlighted in green; those corridors where road dominates are highlighted in blue.

Table 1 Mode share (%) by corridor (2020)

CORRIDOR	HEADHAUL			BACKHAUL		
Intermodal	**Rail**	**Road**	**Sea**	**Rail**	**Road**	**Sea**
East West	65%	17%	18%	77%	22%	1%
Adelaide – Perth	56%	42%	3%	63%	37%	-
Brisbane – Perth	45%	31%	24%	56%	44%	-
Sydney – Perth	68%	8%	24%	88%	11%	1%
Melbourne – Perth	70%	9%	17%	87%	11%	2%
North South	11%	88%	1%	7%	93%	-
Melbourne – Sydney	2%	98%	-	4%	96%	-
Sydney – Brisbane	3%	96%	-	2%	98%	-
Melbourne – Brisbane	28%	69%	2%	17%	83%	-
North Coast Line	53%	47%	-	42%	58%	-
Brisbane – Cairns	64%	36%	-	42%	58%	-
Brisbane – Tville	83%	17%	-	66%	34%	-
Brisbane – Mackay	38%	62%	-	21%	79%	-
Brisbane – Glad/Rock	12%	88%	-	24%	76%	-

Source: Synergies

Figure 1 - From Future of Freight mode share workstream, page 3.

On the north-south corridor, with shorter haulage distances, rail faces significant challenges to capturing mode share.

- Road is the dominant mode in both directions for all origin-destinations pairs. Over time, road has successfully entrenched itself to capture around 88% of the headhaul task and around 93% of the backhaul task. Rail's modal share has declined significantly since 1995, but has generally stabilised over the last 15 years. This has occurred against the backdrop of sustained NSW Government investment in upgrades to the Hume and Pacific Highways, and granting of access to high-productivity vehicles, whilst during the same time, there have no productivity benefits passed to rail freight operators.
- Rail's modal share is strongest in the long-distance Melbourne-Brisbane leg. Synergies estimates that rail achieves 28% of volumes in the headhaul direction and 17% for the

backhaul (total corridor basis). However, on the shorter Melbourne-Sydney and Sydney-Brisbane legs, rail achieves a mode share of under 3%.

- There is some degree of uncertainty about road freight volumes by line segment on the north-south corridor due to the assumptions made about the geographic zone for each origin-destination pair. However, Synergies' estimates of total road freight volumes along the north-south corridor have been internally reviewed against other available information provided on a confidential basis by BITRE.

Rail's service quality (in terms of reliability, frequency and transit time) is generally poorer than for road. For rail to be competitive against road, the total cost to the customer for rail freight (including terminal and pick-up and delivery (PUD) costs) will usually need to be well below the total cost to the customer of alternative road freight services. Rail is subject to regular disruptions from track possession, which are often not aligned between RIMs. There is also no evidence that the increase in track possessions has resulted in a material improvement in track condition, network reliability or resilience, which suggests that network need to be more accountable for justifying the possessions.

However, the impact of different modal choice drivers differ depending on the type of freight. For intermodal freight, decisions about mode choice are largely based on the time sensitivity of the product's delivery, from which price/service trade-offs can then be considered.

The relative service quality performance for road and rail, and thus reasons for rail's mode share on the north-south corridor are summarised in the table below.

Table 3 North-south corridor - service quality relative to road

	Rail
Transit time	**Significantly slower to much slower** • Melbourne-Brisbane standard rail service is 25% slower than standard (solo driver) road, and 60% slower than express road • For shorter Melbourne-Sydney and Sydney-Brisbane routes, rail is well over double the transit time for road
Frequency	**Moderately less frequent** • Rail offers daily service frequency, compared to road's 'as required' service
Reliability	**Moderately less reliable** • Rail's reliability of achieving advertised freight availability times is around 85% in the headhaul direction, compared to road's average of 98%
Price	**Moderately lower** • Rail freight (including PUD) generally 80-90% of road freight cost

Source: Synergies

Figure 2 - From FoF mode share workstream, page 8 (https://ara.net.au/wp-content/uploads/Future-of-Freight-Improving-modal-share-1.pdf)

The Future of Freight report goes on to identify a number of key trends and conclusions regarding the relative performance of rail freight and thus key drivers of low mode share in the intermodal freight markets nationally. The full detail is linked in the footnote below, and can be summarised as follows:

1. The key drivers of mode choice are door-to-door price, reliability and transit time;
2. Rail has poorer service quality than road, but many customers are willing to trade off price and service quality provided their overall service requirements can be met;
3. Haul distance is important to price and service quality;
4. Shipping will return as a strong competitor for long distance freight;
5. Road productivity, supported by Government policy initiatives, has increased faster than rail;
6. Inland Rail has the potential to facilitate a step increase in rail productivity for Melbourne-Brisbane;
7. Efficient access to highly productive intermodal terminals; and
8. The relative attractiveness of rail can be significantly increased by improving rail reliability.

NSW as part of national freight systems

The Constitution of Australia assigns responsibility for transport policy to the states, which sees the critical policy and investment responsibility for transport and freight systems residing with state actors. However, international thinking is increasingly seeing a shift towards concepts of 'end-to-end freight journeys' or 'freight-as-a-service' in a similar way to the evolution of thinking about public transport over recent years to focus on customer journeys and mobility-as-a-service. It is for this reason, that it is critical to understand that NSW decision-making and policy formation is a key part of the larger national landscape. Whilst this submission will seek to focus on the opportunities for the NSW Government to support a thriving and effective freight and logistics sector within NSW, this is only possible with effective coordination and collaboration at a national level which includes all states and territories.

In 2023 the DITRDCA conducted a review of the National Freight and Supply Chain strategy, putting the spotlight on what is required to ensure a modern, efficient, multi-modal and resilient supply chain servicing Australians for the future.

The ARA and FORG made a joint response to the Review of the National Freight and Supply Chain Strategy, in which we urged the federal government to focus on collaborative efforts that could drive the productivity, resilience and sustainability of national supply chains. We make the same emphasis here, and will detail further the opportunities for NSW to proactively engage with and indeed drive the National Cabinet's Interoperability agenda being progressed through Infrastructure Transport Minister Meeting (ITMM) with the leadership of the National Transport Commission (NTC).

There is limited ability for the industry to meaningfully impact interoperability challenges constraining productivity within the current structure of authority shared by jurisdictions without achieving a step change in commitment to coordinated decision making in the national interest or major Commonwealth intervention.

Development of alternate options for industry coordination that are able to more effectively address these issues will be critical in enabling the development of strategies to address the constraints arising from network and jurisdictional regulatory fragmentation, and will assist in reducing barriers to entry. While alternate industry coordination options will not, by themselves, resolve these issues, more effective industry coordination mechanisms are an essential pre-requisite to the development of long-term solutions to these matters.

Recommendation: Prioritise resources within TfNSW and associated public service entities to drive implementation of national commitments to deliver rail system interoperability across NSW assets (track, signalling and associated infrastructure) and pursue change or coordination where required to deliver interoperable operating conditions (safeworking rules, training requirements, rollingstock approval and testing requirements etc.).

Industry engagement

Overall, the rail freight sector's experience of engagement with the NSW Government, namely Transport for NSW, has declined in quality over recent years. At the time of development of the current strategy in 2013, TfNSW took a 'customer centric' approach to development, with a key focus on understanding the need and priorities of key freight customers and exporters. This information was then expanded to a whole-of-supply-chain view, incorporating the perspectives of all key players to achieve clear objectives.

However, subsequent TfNSW restructures and changes in resourcing have meant that many of the rail-related initiatives in the 2013 strategy and 2018 plan have not been delivered on, and there has been a lack of specific policies or actions to deliver on goals, especially in relation to rail mode share.

Industry's experience suggests that TfNSW has shifted to a 'mode-centric' organisation with initiatives designed to provide solutions to the problems of a given market segment or mode, but without appropriate understanding and focus on understanding or addressing needs of those involved in the entire freight journey.

TfNSW resourcing belies the inequality of policy weight applied to road and rail. Over recent years, TfNSW Freight Branch has been well populated with many dozens of employees with strong expertise in road policy whereas expertise on rail freight has been sorely lacking (less than five individuals at any one time). TAHE have contributed two resources to address this challenge in the short-term, but this inequity requires much more serious consideration if the stated goal of mode shift is to be realised.

Recommendation: Leadership of TfNSW manage a regular forum attended by the Rail Operators Group, all RIMs, Freight Branch and industry representatives to establish executive-level focus on the implementation of the forthcoming state freight policy, managing operational difficulties and advancing harmonisation initiatives recommended throughout this submission, including production of 6 monthly reports to Ministers and published online against strategy KPIs.

POLICY & REGULATORY SETTINGS

Improving the efficiency and safety of Australia's rail system by continuing to align or harmonise operating rules, infrastructure and operational standards and systems across the nation's rail network is a key priority for the NSW freight sector.

The rail freight industry echoes the concerns expressed by the NSW Auditor-General's 'Rail Freight and Greater Sydney'[7] published in late 2021 that NSW will struggle to meet increasing demand for freight movements unless rail plays a larger role in the movement of freight and that despite numerous state strategies to achieve greater rail mode share, the implementation of these has been unsuccessful in achieving their strategic objectives.

This lack of a national rail systems perspective is compounded by the increasing sophistication of below and above rail technology, rollingstock, signalling and communication systems. These factors stand to exacerbate interoperability issues over time.

Over the past decade, TfNSW has seen several significant restructures which in turn has significantly reduced the profile of not just the rail freight industry but also the freight industry. Freight policy responsibility is now scattered throughout various bodies in the NSW government which has prevented the development of meaningful rail freight policy.

The multiple restructures have led to rail operators approaching the Australian Competition and Consumer Commission (ACCC) to secure authorisation for a Rail Operators Group (ROG) to allow members to collectively negotiate with TfNSW on track access arrangements. This has come at a significant cost to the operators.

Furthermore, the NSW government has set out ambitious policy objectives, however, with the current resourcing of rail freight policy within TfNSW, it is clear that the incentives are not appropriately structured to achieve the desired outcomes. Additionally, it is unclear whether TfNSW has the appropriately skilled resources or leadership to develop these policies within NSW or when working with the NTC on national reforms.

Structural constraints on rail freight productivity

Rail freight efficiency on key intermodal corridors is constrained by a number of factors, many of which are related to inconsistencies that exist between networks and between jurisdictions. There are also other factors that impact intermodal efficiency that are more industry-wide (and some that are economy-wide). All of these factors impact on rail's competitiveness and, in turn, its mode share, by increasing the cost (and ultimately the price) of rail freight services and, in some cases, reducing service standards including service reliability. Importantly, these constraints further impede rail efficiency by stifling future gains from existing investments as well as discouraging future investments in establishing a more competitive rail service.

Over the last three decades, there has been significant change to the structure of Australia's rail industry. Privatisation of elements of the rail sector, together with government institutional changes, have resulted in a significantly increased number of independently managed rail networks. For those constraints that are fundamentally caused by the fragmented management

[7] Rail freight and Greater Sydney: Performance Audit, Audit Office of NSW, October 2021.

of Australia's rail networks, or by the jurisdictionally based regulatory frameworks, the extent of the impact depends on the extent to which services cross separate train networks and operate within different jurisdictions.

The same regulatory framework applies across RIMs, however, co-regulatory framework means that interpretation of regulatory obligations differs by RIM. Across NSW this includes: Sydney Trains, Country Regional network managed by UGL Regional Linx, ARTC, TAHE (network owner and contracting party) and TfNSW (responsible for negotiating access agreements with operators on behalf of TAHE, policy development and also responsible for the development of the Sydney Trains timetable).

In addition, multiple access agreements are required for operation of individual services. See further information under access and pathing below.

The desktop literature review and direct stakeholder consultations conducted to inform the 'Safety and Operations' workstream of the Future of Freight report concludes that the key operational constraints on operational rail efficiency are:

1. Inconsistent operational standards and rule books;
2. Silo based safety management systems;
3. Inconsistent physical standards and equipment;
4. Coordination of pathing, train management and possession arrangements;
5. Inconsistent access management and regulation;
6. Concentration in the above rail market due to barriers to entry;
7. Inconsistent environmental regulation;
8. Workplace flexibility;
9. Insufficient skilled labour;
10. Driver training;
11. Fatigue management;
12. Passenger priority; and
13. Lack of access to real time prediction of freight arrival.[8]

The 'Safety and Operations' workstream of the Future of Freight goes on to examine how each of these constraints have the potential to influence the key mode share drivers in terms of reliability, transit time, service availability/frequency and price, and then evaluate the extent to which each constraint represents a major impediment to rail operating efficiency, but if addressed, could potentially offer material benefits in terms of improved mode share. The assessment shows there is 'no low hanging fruit' or 'easy fixes' to improving rail operating efficiency, and so recommends prioritisation of any high impact impediments that, if addressed, could potentially allow further progress to be made on the removal of efficiency constraints on an issue-by-issue basis.

The most important factors that are driving this lack of strategic alignment relate to structural market design issues (i.e. network fragmentation) as well as the absence of institutional and regulatory arrangements to improve industry coordination. These are explained as follows:

1. **Network fragmentation and mixed organisational focus on intermodal freight**

[8] Executive Summary of the 'Safety and Operations' workstream of the Future of Freight report, page 2.

- RIMs are almost all expected to operate within a commercial framework and are governed by their own commercial drivers. Intermodal freight is not a priority for some RIMs, where it is a minor customer, and the RIM's commercial outcomes are largely driven by its performance in meeting the needs of its major customers (eg passenger services in the metropolitan networks, coal services for the Hunter Valley and Central Queensland coal networks). The problem is exacerbated where Governments, as owner or funder of networks (particularly metropolitan passenger networks), do not specify any clear freight objectives or clearly defined freight performance metrics, or where they prescribe returns or prioritise investment which is not consistent with freight operators' priorities.
- This is not a criticism of the RIMs, as they are all responding to their own organisational objectives. Rather, it is a predictable outcome of the incentives created by the governance framework and the market structure. However, given the extent of misalignment of commercial objectives, it is unrealistic to expect that the industry should be able to collaboratively reach a commercial agreement on how to address many interoperability issues, as there is little benefit to the RIMs from doing so, particularly in isolation, and potentially material costs involved.

2. **Regulatory frameworks that do not promote harmonisation**
    - While there are long term policy agendas to promote harmonisation, the focus has been on harmonisation between RIMs through industry collaboration. This approach also runs into difficulties where the stakeholders are subject to differing jurisdictional regulatory requirements and/or are governed by different jurisdictional regulators who may have different priorities and interpretations of requirements.
    - Even in rail safety, where there is a single regulatory framework and a single national safety regulator, harmonisation concerns still apply to the co-regulatory framework, which advises each RIM to develop its own safety systems to address the risks on its network has significant benefits in permitting flexibility within a network, but it does not promote harmonised approaches to managing risks across networks.
    - This approach to regulation of rail networks differs materially from the regulation of other cross jurisdictional infrastructure networks, such as electricity, gas and telecommunications, as well as the road network. In these cases, the intrinsic characteristics of the service provided (where there is no equivalent complexity to the wheel:rail interface present in rail) support regulatory frameworks that are designed to promote consistency in standards and approaches in order to maximise interoperability and reduce barriers to entry.

A key priority to drive rail mode share must be the development of tangible mechanisms to incentivise the two-way utilisation of trains to/from Port Botany and to grow access for freight trains on the metropolitan shared network across the entire 24/7 period.

TfNSW should adopt a risk-based approach for trains operating to/from Port Botany who utilise the shared metropolitan passenger/freight network to provide greater access for these trains, particularly during the current curfew periods. A risk-based approach could allow certain trains to access the network during current curfew periods, allowing the network managers to collect data on the performance trains to inform future decision making around expanding access further for freight trains.

Recommendation: NSW Government accept and action PBLIS Review Recommendation 20 (Improve governance frameworks to align public infrastructure managers with the port rail task) including establishing a public freight level of service (FLOS) for the shared metropolitan passenger/freight network, and recommendation 21 (Examine future rail options) including unified train planning & standard train lengths which will each assist with improving efficiency across the metropolitan shared network. This should be supported by develop of a clear and transparent definition of "passenger priority".

Recommendation: Prioritise the introduction of centralised guidance across all NSW agencies (and in line with progress to achieve this nationally) that promote safety and productivity gains through operational harmonisation and work to identify the specific actions required to address high priority harmonisation related constraints, including actions agreed to under the National Rail Action Plan and other regulatory reviews.

Recommendation: Require all NSW agencies (including the Environmental Protection Agency) impacting rail freight policy to report every 6-months to Ministers and publish reports on freight performance metrics and how it has supported the delivery of the renewed freight strategy.

Impacts of network fragmentation: a case study – Rollingstock approvals

Before operating any given piece of rollingstock, operators first need to secure accreditation from ONRSR (referred to as rollingstock accreditation) and then approval to operate from each RIM it is intended to be used (referred to as rollingstock approval).

The RIM approval process is unique to each network and requirements differ between them. In many cases, the requirements for approval are not clearly articulated and available to industry participants or potential entrants prior to application. Given there are typically multiple networks per state, this results in many more regulators and quasi-regulators than above-rail operators in Australia.

As BITRE acknowledges in their 2006 report, "national train operators face more multiple generic and rail industry regulations than most other industry players".
(Source: Optimising Harmonisation in the Australian Railway Industry, Sept 2006, BITRE, page17).

For example, a single operator Aurizon which primarily operates bulk or heavy haul services across three states must deal with six networks (including one network that Aurizon manages itself) and five regulatory authorities in addition to environmental regulators.

Operators must submit detailed and lengthy applications including technical specifications and test evidence to RIMs to secure approval to operate. Depending on the RIM, this can take anywhere from a matter of weeks to many months, and in some cases well over a year. Achieving an outcome also often requires technical expertise to be employed in-house or to be engaged through consultancy, a further cost to operators. In addition, new or innovative rollingstock is typically rejected initially as it departs from the "norm" for current rail principles, and it is these principles that are being used to assess and approve new equipment.

The constraints on interoperability imposed by rollingstock approval processes also have a negative impact on freight customer mobility within industry and hinder more robust competition between above-rail operators. For example, for specialised goods such as steel products, switching between operators is made much more difficult by the fact a prospective carrier needs to procure specialised wagons and get approval for these wagons to operate on the relevant networks. The extremely high capital cost of this investment and uncertainty and opacity of the accreditation process means this customer is very 'sticky' and acts as a barrier to competition.

Further, multi-layered accreditation and lack of clarity on network requirements mean operators can be tempted to purchase for the widest possible access outcome, meaning they buy for the lowest common denominator. In other words, they will identify the poorest quality track infrastructure (typically denoted by lowest axle weight or speed limit) across the networks they intend to operate and procure to ensure they will achieve access to this track. This will also act as a barrier to effective transition to decarbonised rollingstock. The confused and inconsistent rollingstock approvals thus act as a disincentive to invest to optimise rollingstock.

Ironically, the most difficult accreditation processes are typically applied in metropolitan areas where freight trains are accessing track that is shared with passenger services. Whilst this may present as logical given heightened reliability, efficiency, emissions and physical access concerns when compared with regional networks, it often results in 'grandfathered' rollingstock predominating on these networks, where the most desirable outcome for the industry and community would be the opposite.

Access and seamless pathing

Multiple access agreements are required for operation of individual services and often includes multiple RIM transition points during operation of individual service. This requires operators to navigate multiple access frameworks across NSW:

- ARTC – submits voluntary access undertakings to ACCC under National Access regime, separate access undertakings for Hunter Valley network and Interstate network.
- ARTC – ARTC's sections of Sydney metropolitan rail network remain subject to NSW Rail Access Undertaking regulated by IPART.
- Sydney Trains, Country Regional Network – subject to the NSW Rail Access Undertaking regulated by IPART.

Further, different train control systems, operating requirements, on-time thresholds, and possession regimes are applied by the different RIMs. In addition, there are some broad-gauge lines in NSW which are managed by V/Line, which have been excluded from this paper to reduce further complication.

The fragmentation of access arrangements and lack of central coordination creates difficulty and complexity for operators securing contiguous paths across networks, thus increasing transit times, and reducing the ability to maximise the use of available rollingstock and network capacity. Poor operational coordination also reduces rail service reliability and increases cost by reducing rollingstock utilisation. By comparison, there are no equivalent constraints on access or productivity impacting road freight providers.

A re-alignment of incentives to promote seamless rail freight supply chains when traversing multiple networks and jurisdictions is fundamental to improving rail freight efficiency and maximising rail's ability to compete with alternate modes. This requires improved harmonisation of operational standards and processes with a focus on improving both safety and productivity, as well as improved harmonisation of environmental and access regulation and management. The rail industry, by itself, cannot achieve the necessary change; government facilitation is required in order to provide a regulatory and governance framework for developing guidance on the best practice approaches to each of these issues, as well as to resolve issues where agreement cannot be reached through collaboration alone.

> **Recommendation: Commission an investigation into the most effective rail freight coordination model to optimise the efficient movement of rail freight across the multiple rail networks in NSW.**

Case study: Hunter Valley Coal Chain Coordinator

The Hunter Valley is arguably the best managed, most efficient and productive publicly owned rail freight infrastructure in Australia. The region achieves very high above and below rail asset-utilisation, excellent reliability and performance, and leading profitability. This is thanks to the central coordination of the Hunter Valley Coal Chain Cooperative (HVCCC), a model industry recommends be considered for application elsewhere.

Formation

In 2003, an Industry review team recommended implementation of a centralised coal chain planning body to deliver benefits for the coal industry. This led to a precursor organisation to the HVCCC being formed, before it evolved into its current model in 2009.

Up until this time there was no central planning and coordination process for the movement of coal through the Hunter Valley coal chain. All planning was done at the individual service provider level, often resulting in inefficient planning and scheduling of coal through the coal chain, a lack of coordinated planned maintenance activities, excessive cancellations, conflicts over who had access to coal chain infrastructure, and when and where, investment uncertainty, large vessel queues and international reputation damage, and crippling demurrage costs. These are similar challenges to those experienced by rail freight operators to this day across most of NSW.

Mission and scope

From the beginning, membership of the HVCCC included all organisations responsible for the transport of coal from Hunter Valley mines to the port and onto ships for export, including operator of the cargo assembly and ship loading terminal, rail freight operators, ARTC as track owner and Newcastle Port Corporation.

The HVCC was the first cooperative model of its kind in Australia implemented to maximise export opportunities through a coordinated approach to planning. Membership was open to any existing and future service providers of transport and port infrastructure along the coal chain.

The HVCCC uses an elaborate and detailed simulation model of the HVCC to analyse and assess the throughput of the system, to detect and identify any bottlenecks in the system, and to investigate and explore the benefits of infrastructure upgrades and expansions.

With services spanning from ‘day of operations’ to 10 years, HVCCC aligns coal chain capacity with demand, integrating maintenance and operation to synchronise the flow of coal from load points to power stations and vessels through a vast network of interdependent infrastructure. HVCCC planning and scheduling routinely delivers productivity and efficiency that is aspirational for other coal chains, as well as accurate forecasting and modelling, and insightful analysis.

Although executing the perfect plan is ideal, disruptions from weather, unplanned maintenance and schedule slippage are inevitable across such a vast network. Amid these challenges, Members depend on HVCCC to maximise throughput for peaks lasting weeks or months and, at all times, to optimise the efficient interaction of coal chain assets to serve collective needs, mitigating the increasing complexity of demand being met from more distant load points.

Outcomes

The coal chain enjoys unprecedented long-term strategic planning, transparency, stability, cooperation and a sense of fairness and trust. The Hunter Valley coal chain is now the largest coal export operation in the world and consists of:

- Approximately 35 coal mines owned by 11 coal producers;
- Coal haulage distances of up to 450 kilometers;
- More than 30 points for loading coal onto trains;
- Four rail haulage providers delivering to three coal terminals; and
- The movement and loading of more than 1600 coal vessels annually.

In their 2021 report 'Rail Freight and Greater Sydney', the NSW Auditor-General concluded that transport agencies do not have clear strategies or targets in place to improve the freight efficiency or capacity of the metropolitan shared rail network and do not know how to make best use of the rail network to achieve the efficient use of its rail freight capacity.

The industry believes that the Auditor-General's report, combined with similar experiences in other jurisdictions, provides a clear indication that policy settings need to change for rail freight to play a greater role in meeting the growing freight task at our ports.

The inflexible application of passenger priority and peak curfew requirements is also challenging and excessively restrictive. They have the effect of increasing the cost of rail freight services by reducing rollingstock utilisation and ability to maximise use of rail network capacity, and reduces reliability by creating additional delays for freight trains.

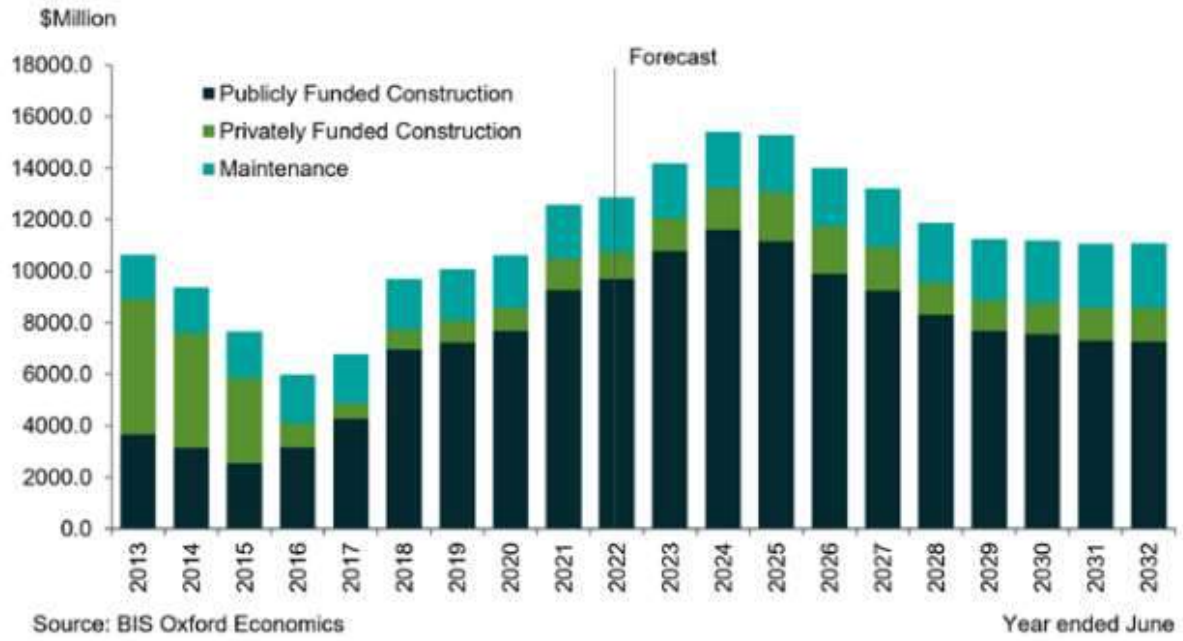
> **Recommendation: Review passenger priority access arrangements to resolve a more flexible and transparent approach to managing network access across passenger and freight services, supported by the signing of Service Level Agreements between Sydney Trains and rail freight operators.**

National action on interoperability

Last year the Prime Minister, state Premiers, and territory Chief Ministers made the historic decision that "Improving the interoperability of rail systems" would become a National Cabinet priority. This decision signifies how important this issue is to governments across Australia to ensure our rail systems are able to operate more efficiently and be better utilised for the movement of freight. The decision is also reflective of the unprecedented level of investment in rail infrastructure projects across the country.

Rail construction and maintenance activity in Australia rose to a record $12.9 billion in 2021-22, with activity forecast to average $14.4 billion over the next five years. Overall, $129 billion in rail civil construction and maintenance is forecast for the coming decade to 2031-32, compared to $96 billion over the last decade. Over the next 15 years, $154 billion in rail construction work is expected.

Figure 2



With such a significant investment pipeline in place, it is essential that solutions to our interoperability challenges are addressed as soon as possible. It is also worth noting that much of this investment is being undertaken by state governments on passenger rail projects, largely isolated from other networks with little consideration for freight operations or interoperability. Improving interoperability will be critically important to avoid a 'digital break of gauge' in signalling systems, similar to the physical break of gauge that has plagued rail track infrastructure since Federation.

National Cabinet has now delegated Infrastructure and Transport Ministers (through ITMM) to progress the issue of improving the interoperability of rail systems. In December 2022, the Minsters of ITMM agreed that the NTC focus on five priority areas identified as critical pain points for the rail industry.

These priority areas are:

1. Identifying the best mechanism for codifying a small number of critical national standards and complementary rules to make rail more competitive;
2. Aligning train control and signalling technology on the eastern seaboard;
3. Reducing the burden on drivers, crew, and maintenance workers;
4. Streamlining rollingstock approval regimes; and
5. Identifying the national/international pathways for digital skills required in Australia in the next five years.

At an ITMM in June 2023, Ministers agreed to codify a small number of high-impact interoperability standards required to achieve nation-wide safety and productivity benefits. The standards will be performance-based with a priority focus on digital train technology, a single on-board interface for drivers and crew, and streamlining rollingstock approvals. Ministers also asked that a stocktake and gap analysis be undertaken of the current supply chain capacity in the Australian rail manufacturing sector, including identifying opportunities to support local suppliers to grow and have greater ability to deliver componentry to support local outcomes.

Further to this initiative, the Australian and Victorian governments, as well as the ARA on behalf of rail industry leaders, have come together to sign the historic Memorandum of Cooperation to address longstanding coordination issues between Australia's rail networks.

Given the significance of the rail interoperability challenge and the current focus from all governments on improving productivity, it is essential that this issue be recognised in the Strategy. Rail is already responsible for the majority of Australia's freight task and if it is to become more competitive with road in the containerised freight market, as well as play a greater role in decarbonising the economy, then it is critical that we improve the interoperability of rail systems.

> **Recommendation: See above recommendations regarding national interstate and intra-state interoperability.**

Land use planning

Land use planning, corridor preservation and appropriate protection of industrial lands is critical to the ability of the sector to manage the freight task projected over coming decades.

Urban encroachment on formerly industrial lands as Sydney grows consistently adds pressure to existing rail freight operations, terminals and workforces. The projected population growth and densification of existing population centres and demands for passenger rail services are all going to further constrain rail freight operations.

The freight and logistics supply chain requires well-located, large parcels of industrial land for warehouses, depots and logistics activities. Specifically, intermodal terminals require industrial lands within their catchments to maximise their productivity – the higher the availability of nearby industrial land, the more cost-competitive rail freight becomes through greater volumes being attracted to that catchment. Sufficient supply of well-located industrial land in Greater Sydney will reduce the cost of moving freight and increase efficiency and productivity while minimising traffic, emissions and amenity impacts.

It is critical that land use policy protects what's left of our industrial lands, while also providing for additional, well-serviced industrial zones to cater for the nation's growing trade needs.

> **Recommendation: Retain existing industrial land and expand supply through rezoning and servicing of additional land. Existing industrial land (including in urban areas) should not be rezoned for other uses.**

> **Recommendation: Prevent the subdivision of large parcels of industrial land into small lots unsuitable for freight, logistics and industrial activities and encourage the consolidation of small industrial lots into larger land parcels.**

> **Recommendation: Optimise the use of industrial lands and avoid constraints from urban encroachment by improving the planning approvals process; improving design standards of residential developments in urban areas; and creating buffer zones to minimise impacts on communities.**

Freight and passenger rail track separation is the most obvious way to manage growing demand for access (see recommendation management of shared access above) but is also very expensive. The industry applauds the NSW Government and ARTC's investment in the Botany Rail Line Duplication and Cabramatta Loop as an example of capacity build for rail freight services which address congestion of the metropolitan network. The industry also eagerly anticipates the delivery of the Western Sydney Freight Line business case.

> **Recommendation: Complete the Western Sydney Freight Line Business Case, and if favourable, vigorously pursue state and federal funding to build it.**

> **Recommendation: The NSW Government must consider how the competing demands of passenger and freight rail will be provided for over time, and how the state can successfully balance urban densification with the need to increase transport capacity for both freight and passenger services of all modes in urban areas while protecting rail freight capacity on the shared network.**

Long term corridor protection and preservation

While network capacity is not a high priority in the immediate term, the very long timeframes associated with the planning and development of new corridors means that there is a high priority associated with the identification, preservation and preliminary planning for freight corridors where long-term capacity constraints are anticipated. It is also essential from a planning perspective to ensure that existing capacity and transit/cycle times for freight services on critical corridors are not eroded by other developments, including urban encroachment and increased utilisation by passenger services.

Planning and corridor protection is the responsibility of all levels of government. A 2017 Infrastructure Australia Study ('Corridor Protection') identified that a national framework for corridor protection was required to guide coordinated and meaningful action by all levels of government.[9] The 2019 National Action Plan of the National Freight and Supply Chain Strategy committed to identifying and protecting key freight corridors and precincts from encroachment.[10]

> **Recommendation: Consistent with the 2019 National Rail Action Plan, the NSW Government should lead action amongst state and federal peers to coordinate assessment of long-term network capacity requirements, and the extent to which this may require additional rail corridors (including freight only corridors in urban areas) beyond those for which corridor preservation is complete or underway.**

It is critical that TfNSW is well integrated with peer agencies on matters impacting freight systems, and that they exercise their relationships with supply chain participants including rail freight operators to make informed land use planning decisions. This has not always been the case.

> **Recommendation: TfNSW to utilise freight stakeholder relationships (see below) to ensure planning decisions involve timely and appropriate open consultation with the freight sector.**

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[9] Infrastructure Australia (2017), Corridor Protection, Planning and investing for the long term, July 2017, p.32.
[10] Transport and Infrastructure Council (2019), National Action Plan, National Freight and Supply Chain Strategy, August 2019, p.17

When conducting long-term network planning, it is critical that shifts in freight flows are forecast and considered. From a rail perspective, this includes considering how the decline in coal volumes over coming decades, especially in the Hunter Valley, will impact on available network capacity, utilisation of the Port of Newcastle, connectivity to Inland Rail both now and following completion and interfaces with adjoining networks and infrastructure (such as the development of modern IMTs).

> **Recommendation: Commission a strategic business case to consider the opportunities to leverage existing rail infrastructure over coming decades to deliver better network performance and capacity, and identify which connections or upgrades would be of greatest value to realise these opportunities.**

Empty container management

Addressing the inefficiencies of empty container movements will reduce truck movements and, in theory, reduce overall transport costs. Containers currently destined for road-only serviced empty container parks (ECPs) can benefit from reduced handling by encouraging de-hiring within intermodal precincts, especially if the freight is destined for on-precinct storage.

The existing NSW strategy identifies the improvement of movement and utilisation of empty containers as a priority, but no clear action has been taken to achieve this.

Moorebank Intermodal Terminal presents an opportunity for containers to be de-hired at the precinct then transported by rail directly to the port for export. The customer saves on the cost of trucking empty containers to the ECP, while the shipping line incurs the higher relative cost of moving containers by rail from Moorebank compared to a short distance from ECP to port. Importantly, if the saving to the customer exceeds the marginal increase in cost to the shipping line, there is a purely financial incentive here, on top of the emission, safety, congestion and road maintenance benefits from reduced metropolitan truck movements.

The rail freight sector has developed an industry-led proposal to incentivise this outcome, referred to as the Port Botany Regional Rail Customer Incentive. Despite having received a detailed cost benefit analysis of the incentive scheme commission from Deloitte Access Economics which aligns with NSW Treasury guidelines, there is no evidence TfNSW have assessed or progressed the proposal internally. The incentive scheme has garnered the broad-based support of several supply chain participants including all rail operators and Port Botany's managing entity.

Under the proposed incentive scheme, larger trains (longer than 600 metres) which require splitting and remarshalling to serve multiple stevedores at Port Botany will be redirected to metropolitan intermodal terminals (IMTs) for the cargo transfer to high-frequency, stevedore-specific 600 metre metropolitan port rail shuttles that can directly access the Port's terminals.

By breaking regional containerised port freight trains at metropolitan IMT's for onward distribution by a dedicated terminal shuttle to and from Port Botany, the industry proposed incentive scheme aims to maximise two-way loading and optimise constrained land-side capacity at the port. According to industry perspectives, the incentive scheme has the potential to create significant supply chain efficiencies by:

- **Improving productivity at the Port** by maximising two-way loading and intensifying the utilisation of existing rail window capacity;
- **Reducing emissions** - Standardisation of train lengths and container exchanges can also optimise capacity and support a transition to more dynamic train services;

- **Optimising regional rail operations** by maximising two-way loading of regional trains, such that export laden regional trains can be discharged and backloaded with empty containers at metropolitan IMTs without having to complete an empty leg to an empty container park (ECP);
- **Allowing operators to better respond to disruptions, seasonal fluctuations, and planned maintenance** across the network as export containers can be staged or stockpiled at metropolitan IMTs to avoid planned and unplanned rail network disruptions;
- **Building a more resilient and efficient supply chain** through the staging of regional container exports at metropolitan IMTs; and
- **Supporting greater investment in rail towards the adoption of battery electric locomotives** (BEL) for metropolitan port shuttles in the Greater Sydney region, which can deliver additional emissions reduction outcomes beyond current envisaged levels.

The cost benefit analysis modelled two options, the first being a 5-year incentive program which would be available to regional cargo owners transporting full export containers to Port Botany at $150 per TEU (to compensate for the additional transport costs and the lift on and lift off fee at the metropolitan IMT). Analysis showed that this would result in an additional 102,000 TEU on rail per annum, resulting in 39,000 trucks off the road annually and 200,000 tonnes of carbon dioxide equivalent emissions avoided.

> **Recommendation: Consider options to utilise rail freight to support empty container management, including analysis of the Port Botany Regional Rail Customer Incentive Scheme.**

Road versus rail user charging

Prices for road infrastructure do not encourage the use of the most efficient mode for the right task.

The heavy vehicle road charging framework requires review. The use of diesel/petrol excise as a means of road funding lacks transparency and creates confusion in relation to policies aimed for the uptake of electric vehicles to improve the environmental sustainability of Australia's transport task. Clear user-based charging for heavy vehicles, delinked to diesel utilisation, will assist Australian Governments achieve both their environmental and transport objectives.

PAYGO pricing methodologies should be independently reviewed to ensure there is no cross subsidisation between vehicle types. In order to do this, responsibility for administering heavy vehicle road user charges could be transferred from the NTC to another body, such as the ACCC (which would be the most appropriate body under existing institutional arrangements).

> **Recommendation: Policymakers should re-consider the benefits of Mass Distance Charging in relation to setting road user prices on a basis that are able to better reflect full cost recovery, including sunk capital and externalities.**

In the meantime, increased HPV permits (either increased volume or geographical scope) should only be granted where this has been subject to a cost benefit assessment including considering the likely consequence on mode share.

Government incentive schemes to promote efficient mode utilisation may be appropriate in local instances to encourage a mode shift and/or to address a discrete policy objective, and are most effective when used as a transitional measure until the full benefits of longer term strategies to promote rail productivity are realised (see above case study).

Regulation of rail servicing charges

The current drafting of the PBLIS Mandatory Standards includes rail pricing and performance regulation in two ways:

- Rail lifts charged at $15/lift for the first 36 lifts per hour increasing to $30/lift for any lifts above the 36 in that hour.
- Rail service performance by stevedores is a minimum 36 lifts per hour.

Where less than 36 lifts are performed and containers were available, the charge is decreased by $30 per container not serviced. The arrangement also includes provisions for each 15-minute period after the first hour and for the carrying forward to the rail operators' next service of any negative balance a stevedore may owe.

Under the current practice rail windows are charged at $15/lift for the number of lifts in the allocated window (e.g. 108 lift window x $15/lift = $1,620). The rail windows are scheduled based on the 36 lift/hour rate (e.g. 108 lift window = 3 hours + 30min for shunting time), it is understood that compliance with the current mandatory standards for rail is not closely monitored by the body responsible for managing the PBLIS regulation and mandatory standards.

This original structure was intended to encourage rail operators to arrive with 36 or more containers per one hour rail window and for stevedores to be incentivised to lift more than 36 containers per hour.

The regulated price ($15/lift) and service level (36 lifts/hour) have not been changed since inception despite significant increases in labour cost for the stevedores. Despite the pricing remaining fixed at $15/lift rail servicing rates from the stevedores have improved their service levels for rail through productivity gains with the FY23 average rail lift rate being 40 lifts/hour.

The structure has also not encouraged rail operators to arrive with at least 36 lifts on a train, FY23 data shows that 26% of trains arrived with less than 36 container lifts with most of these trains being export dominant trains from regional NSW, that arrive into Port Botany with export containers bound for multiple stevedores that do not backload with import containers.

On this evidence it is apparent that the current Mandatory Standards for rail are no longer fit for purpose and should be removed to allow greater flexibility for the industry. Removing the regulated pricing and service levels could incentivise stevedores to focus on achieving further service level improvement and provides ability to "right size" rail windows to ensure that available capacity is allocated as required and that capacity is not being wasted.

Industry have invested heavily in rail infrastructure designed to increase capacity and reliability for the industry, in addition industry has been proactive in implemented rail access frameworks ('RAF') with some of the stevedores in order to drive rail efficiencies and maximise the use of the capacity currently available under the regulated regime.

> **Recommendation: Accept PBLIS Review Recommendation 19 and remove the regulation of stevedore rail servicing arrangements to allow stevedores to set charges and service terms as appropriate.**

Harmonisation for rail supply chain value

Type approvals

Type Approvals require new and/or novel technologies to pass through discrete due diligence testing prior to being adopted by railway operators. Nationally consistent standards for projects could save the rail industry $40 million each year[11] benefiting both the network operators and the suppliers and manufacturers.

Currently, new technology, products and construction/maintenance processes, must pass through each RIM's specific approval process prior to being rolled out, regardless of whether the technology, product or process has been approved or applied elsewhere. Type Approval with a RIM does not currently serve as a 'trust marker' to another RIM. This adds a further hurdle to those that are developing innovative technology and proposing technology across different networks.

The lack of consistent and equivalent type approval processes between jurisdictions and customers costs the rail industry $230 million per year[12]. There is opportunity to develop a more harmonised approach to Type Approval processes applied through cooperative agreement, on a set of standardised principles and approaches. Addressing the weaknesses of the current Type Approval processes will ensure more resilient supply chains and support the growth of the domestic economy.

The industry applauds TfNSW leadership in facilitating a national approach to type approvals. TfNSW and the Department of Transport and Planning Victoria (DTP Vic) have launched a strategic initiative to standardise the type approval process across transport and asset classes. This will be done through the implementation of a consistent type approval assessment procedure.

> **Recommendation: Conclude the trial of standardised type approval underway in partnership with DTP Vic, share learnings with industry, and consider ways to accelerate progress on type approval harmonisation within NSW, and across jurisdictions and RIMs.**

Local content

There are significant benefits to be achieved by both the NSW and Commonwealth governments by taking a more holistic and national approach to the application of local content policies in procurement processes.

Differing local content policies prevent suppliers from operating across jurisdictions, this in turn creates industry efficiencies and prevents the development of a strong and productive industry.

A National Local Content Policy, as opposed to a series of state local content policies, offers the key to unlocking the benefits of scale, componentry harmonisation and design efficiencies. These could amount to a cut of some 19 per cent in rollingstock manufacturing procurement expenses, which would be of considerable benefit across the country, allowing state governments to increase spending in areas such as education and health care.

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[11] https://ara.net.au/wp-content/uploads/20221025-Estimating-the-economic-cost-of-Type-Approval-processes-in-the-Australian-rail-industry_final.pdf

[12] Ibid.

The Australian Government recently launched the National Rail Manufacturing Plan which has committed to adopting a national local content approach. A nationally consistent approach to LCPs would reduce unnecessary capital investment and duplication of capability, deliver greater industry stability, job security, and support a more cost-effective, competitive rail manufacturing sector.

The rail supply chain is spread throughout Australia's eight states and territories. Overall, much of the rail supply chain is largely concentrated in New South Wales and Victoria – reflecting that these most populous states will tend to be centres for passenger and freight rail operations. Many firms operate across borders. In achieving a more sustainable, and competitive rail supply chain, any artificial cross-border barriers that may be preventing effective transfer of capacity or skills between Australian jurisdictions should be reviewed. Implicitly, restricting market access prevents the access to opportunities to achieve economies of scale, a consolidated investment in assets and facilities, and a sustainable rail supply chain.

> **Recommendation: Adopt a holistic, national approach to the application of local content policies in procurement requirements, evaluation, compliance, and auditing processes.**

Pre-qualification

A national accreditation scheme that supports pre-qualification for rail constructors could enable suppliers to input information once, so contractors as well as purchasers can easily identify registered suppliers and access necessary supplier information, including accreditations. Harmonising accreditation recognition across jurisdictions will assist in addressing costly inefficiencies.

There are basic examples of national pre-qualification schemes in roads and bridges as well as non-residential building, and there are certainly opportunities for more sophisticated nationally coordinated sector accreditation schemes internationally (such as in the utilities and rail sectors in the UK) and support by an online portal and platform to minimise duplication and streamline processes.

Establishing a standardised prequalification framework promotes consistency, streamlining processes across diverse rail authorities. Contractors stand to gain significantly, navigating a uniform application process that reduces redundancy and saves time when seeking prequalification with multiple authorities. The initiative facilitates efficient information sharing among rail authorities, fostering collaboration and transparency in assessing contractor performance. This standardised approach not only enhances industry cohesion but also brings about potential cost reductions through streamlined procedures. Moreover, the scheme enables mutual recognition of prequalification status, creating a more interconnected and collaborative rail infrastructure sector. It is proposed that the expansion of the Austroads' National Prequalification System for roads and bridges can be expanded for rail infrastructure projects benefiting both rail authorities and contractors.

Currently there are several various pre-qualification and accreditation platforms in use by various transport and infrastructure agencies, as well and rail operators and managers. This leads to suppliers having to pay for multiple portal access and submit multiple pieces of documentation, sometimes to the same providers portal, where the information is not shared, but housed in different aspects of the providers systems for their various clients. This not only creates substantial costs and administration resource inefficiencies for the supplier/contractor, but there are substantial cost savings to be achieved by the transport or infrastructure client if

there was one agreed portal, where information was shared on an as needs basis, to reduce all parties service fees and substantially improve efficiency outcomes with streamlining outcomes.

> **Recommendation: Support the expansion of the Austroads national pre-qualification scheme to incorporate rail infrastructure projects and participate in the develop and roll out of the expanded scheme supported by a national online portal.**

Project iTRACE

The Australian rail sector does not have a standard language to identify and mark material parts and components. Eighty per cent of rail operators, manufacturers and maintainers are not confident in their master data and seventy per cent of the data reaching the warehouse is not fit for use in current and future software systems. Ordering the wrong part costs money and considerable time is lost correcting the duplicate or misidentified material/serial numbers or data attributes.

The ARA together with industry launched Project iTRACE in partnership with GS1 to set a consistent industry standard for automatic data capture (barcoding and/or tagging) and support efficient management of material master data to assist the procurement process of rail components and assets.

Project i-TRACE creates a common language and a single source of truth, provides a centralised platform via the national product catalogue, removing data errors and duplication between organisations.

The project offers a whole-of-industry standardised approach to lifecycle tracking of an asset or component in the supply chain to support efficient management of material master data to assist the procurement process of rail components and assets. Project iTRACE assists all stakeholders effectively identify rail components and assets, electronically capture information about them and share that information with relevant parties – operators, suppliers and maintainers. It allows national and international product identification and traceability and enables automation and digitisation.

Project i-TRACE contributes substantially to risk reduction, improving data and material quality, workmanship and safety reliability. It also ensures regulatory compliance requirements are met and, with the ability of real-time tracking, allows the rail sector to develop a sustainable business model and speed up transition to a circular economy through the digitisation of data sharing.

> **Recommendation: Implement Project iTRACE by preparing, sharing and maintaining material master data in a digital format, and ensuring you and your suppliers are marking components with GS1 barcode standards.**

INFRASTRUCTURE AND PLANNING

Critical infrastructure gaps

As outlined previously, existing rail infrastructure across NSW is not comprehensively of a standard that enables rail freight operators to provide a service that can effectively compete with road in terms of the key drivers of mode choice – transit time, reliability, frequency/availability and price.

In order to identify how the quality of rail infrastructure and planning processes contribute to rail freight service quality gaps, the 'Infrastructure and Planning' workstream of the Future of Freight report assessed the rail infrastructure characteristics that influence the drivers of rail mode share, including consideration of:

- Trunk rail network characteristics, including permitted rollingstock configurations; allowable speed; capacity; reliability; resilience; flexibility; and train control and scheduling systems;
- Complementary infrastructure, including the quality of intermodal terminals (location, efficiency of cargo interchange, capacity and accessibility to operators) and the quality of their first/last mile connection to road and rail networks, including port shuttle services; and
- Rollingstock, including performance characteristics, reliability and capacity.

The report then considered the difference between current rail performance and established best practice (having regard to the best practice currently achieved on Australia's rail networks) and prioritised these gaps having regard to the nature and extent of benefits, and the extent of constraints. Based on this analysis, the infrastructure gaps that are considered to be most critical to improving rail's mode share for intermodal freight are summarised as follows:

1. **Network reliability and resilience** - Introduction of network improvements and other asset management strategies, to support improved train service reliability, focusing on improved on-time departure from terminals, improved on-time running and reduced network interruptions together with faster restoration of services following interruptions.
2. **Digital train control system** - Introduction of digital train control system, integrated across the intermodal freight network enabling; more effective use of available network capacity; improved safety and reliability; improved transit times; and are an essential pre-curser to increased train automation.
3. **Optimised network planning and scheduling** – Introduction of automated train scheduling systems, integrated across the intermodal freight network enabling; optimised scheduling of train services across RIM boundaries; optimised real time rescheduling; real time journey tracking; and more effective use of available network capacity. (Also see further above regarding access and seamless pathing).
4. **Long term corridor protection and preservation** - While network capacity is not a high priority in the immediate term, the very long timeframes associated with the planning and development of new corridors means that there is a high priority associated with the identification, preservation and preliminary planning for freight corridors where long-term capacity constraints are anticipated. It is also essential from a planning perspective to ensure that existing capacity for freight services on critical corridors is not eroded by other developments, including urban encroachment and increased utilisation by passenger services.

Operators report significant delays due to inability to optimise train paths over multiple networks, inflexibility in crossing locations and operational delays at network boundaries particularly where scheduled path connections are not met across NSW.

Recommendation: To better understand and monitor the reasons for late running of trains, RIMs and rail operators TfNSW should develop standard reporting metrics to monitor network and fleet performance and proactively agree strategies to address challenges identified.

Recommendation: TfNSW prioritise work with ARTC and across local RIMs to development a technical solution for interface between ATMS and ETCS.

Recommendation: Commitment by all NSW RIMs and ARTC to the development of an integrated automated scheduling system across the entire intermodal network, including development of a technical solution to interface between individual RIM automated scheduling systems and capturing regional networks significantly interacting with the interstate network.

The 'Infrastructure and Planning' workstream of the Future of Freight report goes on to identify a series of specific projects beneficial in improving rail mode share as a result of improvements in rail service quality or reductions in rail operating costs.[13] Those relevant to NSW are included below.

Project	Overview	Status
Western Sydney Freight Line	A proposed dedicated freight rail line connection between the Western Parkland City and Port Botany. Project need identified in NSW Freight and Port Plan (2018-2023)	Stage 1 (corridor now protected) – connects from Outer Sydney Orbital near Luddenham and runs to Horsley Park at the M7 Motorway Stage 2 (under investigation) – to provide a freight link from Stage 1 near the M7 Motorway to the SSFL near Leightonfield May 22 – Strategic Business Case is being developed for the rail line, TBC.
ATMS integration on interstate corridor	ATMS continues to be under development. Short of extending the future roll-out of ATMS to other networks, more of the benefits of ATMS on the intermodal corridor could be realised if it was integrated with systems that operate on other parts of the corridor network (Arc), and to the NSW track (Sydney Trains) where interstate trains interface with the passenger network. Interoperability is a significant issue whether other track owners are investing in different platforms to support their own network technologies (i.e. ETCS)	Interoperability and technological interfaces being progressed as part of National Cabinet prioritisation of Interoperability and NTC workplan.
ANCO on interstate corridor	The ARTC Network Control Optimisation (ANCO) is currently implemented in the Hunter Valley network and is designed to enhance dynamic capability to manage variations and streamline network wide train	Not currently being considered in any public forum.

[13] 'Infrastructure and Planning' workstream, Future of Freight, from page 53.

	control It also enables longer trains to run along the network. ARTC manages the movements of around 250 trains per day on the Hunter Valley network, with around half of these being coal trains. The other half comprise passenger services, grain, general intermodal and other bulk freight trains. In the future, the full benefits of digital pathing could be realised if ANCO was extended beyond the boundary of the Hunter Valley network. This could help optimise (non-coal) trains before they enter the network and also continue the optimisation as trains leave the network.	
ANCO integration to connecting regional corridors	An option to integrate ANCO with other connecting systems so that the benefits of digital pathing and train control can be fully captured and extended to those networks before they enter and after they leave the Hunter Valley network	Not currently being considered in any public forum.
Sydney-Newcastle crossing loops	The NSW Government has previously committed to working with rail freight operators to optimise freight train cycle times and trial higher productivity trains for bulk freight movements to Port Kembla and Newcastle (NSW Government, Implementation Plan for the NSW Freight and Ports Plan 2018-2023)	Not currently being considered in any public forum.
Sydney-Lithgow (Blue Mountains) crossing loops	No public information identifying this issue, identified as priority by rail freight operators.	Not currently being considered in any public forum.
Regional NSW Maryvale to Gulgong rail connection	Project to efficiently connect the heavy haul Hunter Valley network to the proposed Inland Rail route by connecting the ~70km railway between Maryvale and Gulgong. This would avoid the requirement to turn trains around at Merrygoen and materially improve cycle times and in turn lower rail costs for primary producers (freight customers) in Western NSW	Not known.

Overall, the state's contribution to advancement of rail freight systems and infrastructure has been extremely modest especially when considered alongside road investments, as is reflected in the personnel and resourcing of TfNSW referenced earlier. If the refreshed NSW freight policy seeks to deliver an improvement in prospects for rail freight and thus increased mode share, careful consideration of the apportionment of expertise and investment is necessary.

> **Recommendation: That Infrastructure NSW be commissioned to investigate the policy and capital distribution between road and rail, considering the commitment of infrastructure investment, other state resources and capability across the NSW public service and make recommendations to equalise distribution of resources.**

Further to information drawn from the Future of Freight report, industry is eager to see the Maldon-Dombarton rail connection subject to an updated business case.

Maldon-Dombarton is a partially-constructed 35 kilometre rail link between the Main South Line at Maldon and the Moss Vale-Unanderra Line at Dombarton, providing an north-south link between South-Western Sydney and the Illawarra. The project was originally driven by the desire to move more coal by rail from the Lithgow and Picton area coalfields. Construction

commenced on the project in December 1983 and was shelved by the new Liberal Government in June 1988 with works completed including some tunnelling, grading of land, and the partial completion of a bridge over the Nepean River. Since this time the construction of this project has, in effect, been on hiatus.

In 2011, the Federal Government published a Feasibility Study into constructing the line. However, "*The Terms of Reference specify a study period to 2030, for a freight railway. The pre-feasibility study clearly determined that including passenger services would impose net economic costs on the line by increasing costs, reducing the ability to optimise freight movements on the line and generating few benefits in terms of better passenger movements.*"

Given the study period was to a point only 6 years away from now, and passenger movements were not investigated given Western Sydney Airport was not yet committed, the Federal Feasibility Study conducted in 2011 is no longer current.

In 2020, the University of Wollongong and the Illawarra Business Chamber, in partnership with both Wollongong and Wollondilly Councils published a Research Paper in to Maldon-Dombarton, or what they refer to as the South West Illawarra Rail Link or SWIRL.

This Paper looked not only at the benefit of the Maldon to Dombarton section but also the connections beyond, to Western Sydney Airport and the Main West Line at St Marys – essentially the Outer Sydney Orbital – a corridor for which was protected by Government subsequent to this Research paper. The Research Paper also differs from earlier work and appraisals as it includes dual purpose (i.e. passenger and freight) and dual track electrified line along the pre-existing 35km-long Maldon-Dombarton rail corridor.

The drivers for Maldon-Dombarton have changed significantly since the original proposal. Port Kembla is identified as the next container port for NSW and already handles a large volume of products that can be handled by rail (cement, coal, mineral concentrates, grain). The future population of Western Sydney is also significantly higher than forecasts of the 1980s, increasing the demand for consumer products and catalysing the development of the Western Sydney Airport. The Illawarra region will play a significant role in supporting the importation and production of essential goods for Western Sydney, and this rail line will ensure these goods are able to be transported by rail rather than thousands of trucks per year.

Additionally, the Maldon-Dombarton line offers an opportunity for additional resilience within our rail network in NSW as climate related impacts on existing infrastructure increase. In 2022 the closure of the Moss Vale – Unanderra Line had a major impact on exports and imports from and to regional NSW.

As a first step, we are seeking the NSW Government (from TfNSW) to fund a Strategic Business Case that looks beyond the limitations of the original proposal, and investigates all the potential benefits of a dual purpose rail line factoring in the changes that have taken place since the last Feasibility Study in 2011.

There is strong support for this next step from local MPs, local Councils (Wollongong, Wollondilly, Campbelltown, Shellharbour, Shoalhaven), Business Illawarra, Business Western Sydney, the University of Wollongong, and RDA Illawarra/Shoalhaven, along with freight customers including Cement Australia, Bluescope and GrainCorp.

> **Recommendation: The NSW Government should fund a Strategic Business Case for completion of the partially-constructed 35 kilometre rail link between the Main South Line at Maldon and the Moss Vale-Unanderra Line at Dombarton (Maldon-**

Dombarton line) which fully investigates all the potential benefits of a dual purpose rail line.

Investment pipeline certainty

A nationally coordinated rail project pipeline would provide clarity and enable forward planning for industry to appropriately invest. Having a frequently updated and transparent public pipeline of projects would also allow industry to invest, plan and train to prevent capability and capacity challenges.

The ARA's Australian Rail Supply Chain report published in 2020 highlighted the importance of this issue, recommending that investment pipelines be regularly reviewed and published well before procurement phases commence. This would ensure local firms have adequate time to prepare and invest to meet the forecast demand.

However, the issue is broader than just having a visible long-term pipeline of work. The promise of work is not enough. The supply chain cannot make commercial decisions to invest in specific capacity and capability until they are contracted to a project. Therefore, delays in the procurement process and the execution of contracts can be an impediment to timely delivery of project milestones.

Recommendation: In the absence of a national coordinating body, state governments should regularly review and re-publish their rail investment pipelines, as well as committing to the priority project recommendations of Infrastructure Australia.

Rail project cost benefit assessments

There is a commonly held concern within the rail industry that not all of the external benefits of rail are properly taken into account in evaluating rail/road investment decisions and other policies impacting mode share. There is significant scope for improvements to the way in which conventional Cost Benefit Analysis (CBA) frameworks are applied to assess the costs and benefits with different transport modes, and hence the consequences of modal shift. Further details on opportunities to improve CBA frameworks to fully recognise the environmental, congestion, safety and amenity benefits of rail can be found in the 'Policy' workstream of the Future of Freight report, pages 4-5.

Recommendation: Infrastructure NSW develop a new standard template for the development of Cost Benefit Analysis (CBA) framework for road and rail infrastructure proposals which appropriately accounts for externalities to be used across NSW agencies.

Network resilience

Over the last three years we have witnessed the devastating impacts that severe weather events and flooding have had on communities around the country. These events have also heavily impacted the rail freight network and resulted in significant disruptions to our national supply chain.

When critical rail links are disrupted, the flow-on effects to other modes and the broader supply chain is significant. Below are some examples of the real-world impacts experienced by supply chain businesses from weather related disruptions to rail infrastructure over the last three years.

- In NSW water utilities were faced with supply shortages for critical chemicals used in water treatment processes, which threatened the supply of clean water.
- There was a complete loss of rail access to and from Port Kembla for almost a month, cutting-off supply chains to and from BlueScope steel and Manildra's Bomaderry mill, and block access to export markets for grain producers in the NSW Riverina and Central West.
- The Shepparton derailment and Broken Hill flooding events severely impacted supply chain businesses reliant on this rail infrastructure. These events in particular resulted in significant community impacts and food security challenges.
- There were delays to critical international grain exports shipped from NSW ports due to the flooding that damaged the connecting rail infrastructure. This damage included a washaway on the Unanderra to Moss Vale line, which closed the line for 7 months and two separate washaways on the Blue Mountains closed the Main West line for over 6 weeks.
- Australian manufacturing facilities experienced significant challenges as a result of supplies being delayed due to rail line outages, with economic impacts felt by both Australian and international customers.

These logistics and supply chain disruptions also result in a significant impact to the economy as a result of lost services, delays, supply shortages, and repairs. Some of recent impacts to NSW are outlined below.

- Flooding in regional NSW in March 2022 led to a total of 200 days of track outages, with 26 return services impacted each week, costing the economy $35 million.
- Flooding in the Parkes region from October to December 2022 resulted in multiple track washouts, 90 days of closure and 18 areas of required repairs, costing the economy $37 million.
- More broadly, the main rail freight line connecting the east coast and west coast of Australia was flooded in 2022 and closed for 24 days, with a direct economic impact of $320 million (or $13 million per day).

Infrastructure resilience is an issue that has come to the forefront for several industries in recent times and rail is no exception. The Australian rail industry has an overarching goal to improve Australia’s productivity and help make rail the mode of choice in the national logistics supply chain, however this goal is becoming increasingly difficult due to the state of rail infrastructure.

It is critical that RIMs be able to promote the greater use of rail by delivering a safe, more reliable and robust rail network which meets customer expectations and provides capacity for growth. Unfortunately, severe weather-related events are increasing in frequency, highlighting the need to improve the national freight rail network through a greater understanding of network vulnerabilities and plan for resilience improvements.

Much of our rail freight infrastructure was built more than 100 years ago and was simply not constructed to modern design standards capable of withstanding the effects of climate change and increasingly extreme and frequent weather events. This has highlighted the need to improve the national freight rail network through a greater understanding of network vulnerabilities and plan for resilience improvements.

Industry efforts to-date have focused on measures to improve resilience but have largely been limited to reducing the probability of infrastructure failure. Future proofing rail supply chains will require concerted effort to identify, fund and deliver a program of rail infrastructure upgrades

across the country which improve network redundancy, reliability and resistance, particularly in response to climate risk. The emphasis has to be on reducing whole of life costs, even where the upfront ask is higher.

The rail freight industry welcomed the commitment of over $1b in the 2024-25 Australian Budget for the ARTC to invest in a comprehensive Network Investment Program over coming years, with an emphasis on building the resilience of the interstate rail network, increase redundancy across the network to achieve greater flexibility to manage disruptions and maintain freight flows, and to enable more rapid recovery from incidents and impacts of extreme weather.

> **Recommendation: The rail freight sector urges the NSW Government to invest in similar hydrological modelling and network planning to identify key vulnerabilities and provide funding for upgrades and opportunities to 'build-back-better' to RIMs outside of BAU revenue streams and network maintenance.**

Regional level crossings

Several high-profile incidents at level crossings have occurred over recent months, most notably including a fatal collision on New Years Eve at a level crossing on the Barrier Highway at Bindarrah in South Australia (near the New South Wales border). The collision resulted in the tragic deaths of two experienced Pacific National train drivers, Mick Warren and Kevin Baker, when the locomotive they were driving collided with a heavy vehicle. This has seen renewed public interest in and prominence of regional level crossing safety.

In February 2024, the new National Level Crossing Safety Strategy (NLCSS) was released. The NLCSS is uncontroversial in its focus and identifies the urgent need for national coordination on data and prioritisation, information sharing on trials and technology interventions and collaboration between road, rail and road user stakeholders.

The majority of level crossings in regional areas, including private crossings, are passive and only protected by signage including STOP or GIVE WAY signs, or sometimes no signage. Safe passage is solely reliant on the road vehicle driver making a judgement that it is safe.

The traditional solution to reduce risk on these crossings was to undertake costly activation works to have boom gates, flashing lights and/or bells which require the provision of electricity at often remote locations and the added lead time to acquire equipment followed by installation. For example, there are over 3,000 public and private level crossings on the ARTC network with around 650 activated. Activating the remaining crossings is not a feasible solution.

There is a need to complement education and enforcement with utilisation of technology to reduce risk across many level crossings without relying on costly engineering solutions. Major advancements in batteries, solar energy and communications technology present opportunities to reduce risk across the network sooner than upgrades while a growing number of suppliers of these technologies is a positive for the industry and safety.

In February 2023, a commitment by the previous Australian Government was reconfirmed by Minister King allocating $160 million towards the upgrade of regional level crossings to improve safety.

Funding submissions can only be submitted by State and Territory governments with priorities informed by state and territory agencies, RIMs, Local Governments and private organisations such as heritage railways.

The Australian Government will fund up to 50% of the cost of each upgrade, capped at $2 million per site. The first of two rounds were submitted by the states and territories in September 2023. Successful sites have been announced for WA, VIC, NSW and SA. Round two sites will be submitted by September 2024 with sites under both rounds to be complete by mid-2027. Funding is being provided to the states and territories.

The industry hopes that the National Level Crossing Safety Committee can help better coordinate and openly report on these to accelerate information sharing and uptake of appropriate options.

There are also awareness and education campaigns being progressed by multiple authorities across Australia.

Whilst the $160m is strongly supported by industry, there are material concerns about the way the Commonwealth has chosen to distribute the funds. The industry applauds the NSW Government for having committed to supplementing Commonwealth funds across the state.

There is a lack of transparency on the evaluation matrix being used and how the funding split is occurring on a state basis. It appears that the number of regional crossings in each jurisdiction is a key determinant of funding, but this is a poor measure because most of these crossings see very little road and rail traffic.

The program incentivises state agencies to prioritise their preferred level crossing upgrades and scope of works. RIMs will need to submit their solutions for particular sites and effectively negotiate with the agencies. RIMs should be the primary source of priorities and preferred solutions as level crossings are managed by them.

> **Recommendation: Align priorities of regional highway patrol authorities to treat level crossing risks seriously, and create a dedicated reporting mechanism for rail freight operators to report incidents and near misses for compliance action. This should be complemented by greater use of mobile technologies for enforcement, reducing the burden on police.**
>
> **Recommendation: fund Rail Infrastructure Managers to invest in a proactive program to replace all signage at level crossings on closed rail lines with fit-for-purpose signage, and develop a streamlined process for the formal and public closure of crossings not in use.**

The NSW Heavy Vehicle Access Policy currently out for review includes requirements that may impact level crossing safety, in particular a proposal to allow 60m long vehicle access to all existing roads in NSW. This excludes roads with restrictions, including level crossings, but this will lead to pressure to permit access to these vehicle types at rail crossings. We see adopting this policy as likely to have a direct and immediate worsening of regional level crossing safety.

> **Recommendation: Review local, state and national roads which can appropriately accommodate heavy vehicles of different types (based on weight and stopping speed primarily) considering the number and type of level crossings to inform the NHVR PBS approvals and permits.**

WORKFORCE DEVELOPMENT

NSW is suffering from a skills shortage, and this is a challenge that has impacted many industries, not least of which is the transport sector. Road, maritime, aviation and rail are all experiencing challenges in securing skilled workers and specialist roles, the combination of which are essential to ensuring we have a strong and efficient state and national freight and supply chain.

The ARA's 2023 'The Rail Workforce: An Analytical Overview' report, confirmed expected national workforce gaps in the rail industry of up to 69,000 skilled workers by 2024, with some areas of specialisation already experiencing acute shortages. This impacts NSW more than other states as NSW has the largest share of rail workers in Australia and has been heavily investing in rail over the last ten years.

Unlike the broader transport sector, rail suffers from significant barriers to mobility, as each jurisdiction and RIM has differing requirements for the training courses that lead to recognition of the competencies held by workers. In other words, at a time when we have significant skills shortages, the freight industry is faced with large productivity losses by having train drivers, maintenance workers and other rail workers undertake RIM specific training every time they operate in a different jurisdiction. This is a very significant pain point for the freight sector, where drivers and other crew are required to hold multiple entry level competency and multiple safeworking competencies in order to move from one RIM to another.

A powerful example in NSW of this issue are the differing training requirements for train drivers to move from the Sydney Trains network to the ARTC network. Not only is there a requirement for drivers to undertake extensive initial training of the safeworking and roads for each jurisdiction, but they are also required to undertake regular recertification training to confirm their competence.

These skills and mobility challenges impact a large number of roles in the rail industry, such as signalling, track maintenance, train drivers and controllers, as well as educators, trainers and assessors. There is also a lack of direct pathways into rail from NSW TAFE and universities, as there are currently no relevant courses in either education sector available. This issue is compounded by a shortage of qualified rail training staff both in industry itself and in private Registered Training Organisations (RTO), with the inconsistent nature of standards and systems across the NSW and national rail network making training particularly challenging.

Historically the large government rail entities, as integrated rail organisations, have undertaken their own training, however, with changes to the structure of the rail industry, and privatisation of most of the freight sector, there is now an urgent need for NSW TAFE to work with the rail industry to be able to deliver rail specific training. NSW TAFE has always supported rail well in the training of tradespeople. However, in relation to the other roles in the rail freight industry, it has not had funding or opportunity to contribute to building skills in the freight industry.

As a proof-of-concept project, ARA and North Metro TAFE in Perth are developing the nationally accredited Rail Operations Fundamentals Skill Set which is made up of 7 units of competence. These units are in several rail qualifications and are entry level. It is planned that the freight industry will partner with North Metro TAFE to take graduates from the skill set into driver training programs where they can learn the specifics of company rollingstock, roads and safeworking. This will be the first time that any units that are in train driving training have been

delivered outside a rail organisation. When private RTOs deliver these units, it is always as a result of a contract between a rail operator and the RTO, not accessible to anyone who is keen to enter the rail industry. Building talent pools as TAFE does for many other industries is urgently needed by the freight industry and many other sectors within the rail industry.

Train drivers have traditionally not been recognised as being in short supply. Largely this is a function of the limitations of the ANZSCO 6-digit occupation codes. Whilst organisations such as Sydney Trains are able to recruit drivers without difficulty, regional freight operators find it much more difficult to recruit the necessary numbers to ensure reliability and succession given the aging demographic of train drivers. It is hoped that the review of ANZSCO codes will result in the splitting of passenger and freight drivers which will ensure government has a more authentic view of skills in the freight sector.

State and territory ministers agreed to the National Rail Action Plan (NRAP) in 2020. The NRAP set out 17 initial actions for governments and industry to lift the productivity and safety of rail, including a specific focus on addressing skills challenges.

This NRAP program of work focuses on three priority areas:

- addressing skills and labour shortages;
- harmonising standards and rules; and
- advancing interoperability of freight and passenger travel.

The NRAP is led by the NTC and brings together governments and industry to maximise the benefits from the record investment through overcoming both legacy and emerging issues impacting the industry.

One of the key ongoing goals of the NRAP is for governments and industry to work together to improve portability of skills across states and territories. NTC is currently exploring the opportunities for harmonisation of key safeworking rules to improve safety and productivity of train crew and maintenance staff.

As with the rail interoperability challenge, the issue of skills harmonisation and portability needs to be recognised within the context of the strategy. While it is critical to ensure we address the skills shortages facing the freight and supply chain sector, it is equally important that these skillsets be mutually recognised across different jurisdictions and networks. Establishing a national workforce with improved skills portability will be essential to ensuring we have a better connected and efficient network in NSW and nationally.

> **Recommendation: Work with TAFE NSW and the ARA to develop an industry partnership model with the TAFE sector to play a greater ongoing role in training the rail workforce of tomorrow and providing pathways to enter the industry for candidates not already employed in industry.**
>
> **Recommendation: NSW Government work with NSW Universities to encourage development of undergraduate and postgraduate rail engineering units to encourage civil, mechanical, electrical and chemical engineering students to seek employment in rail.**
>
> **Recommendation: Require RIMs to adopt full use of national competency matrices and recognised national curriculum for employees and private RTOs.**
>
> **Recommendation: Support reform of ANZCO codes, used to identify critical skills shortages and align Commonwealth policy, to include more rail jobs, including locomotive driver.**

DECARBONISATION

Decarbonising rail freight

In 2022, the Australian Government committed through legislation to achieve net zero greenhouse gas emissions by 2050, with a target of achieving 43 per cent below 2005 levels by 2030. This ambitious goal will require a significant shift in traditional operations for several industries, including the transport sector.

In 2020, the transport sector accounted for 19 per cent of Australia's total greenhouse gas emissions. The vast majority of these emissions (85 per cent) were generated by road transport, with trucks lone accounting for 20 per cent of all transport emissions. Rail by comparison, accounted for only 4 per cent of emissions for the entire transport industry, despite moving 56 per cent of Australia's total freight.[14]

Moving more freight on rail provides a tangible, immediate alternative for reducing carbon emissions in the freight sector. Rail freight produces 16 times fewer emissions than road freight, and delivers significant sustainability benefits by reducing congestion, improving safety and supporting enhanced community outcomes. In 2021-22, rail contributed just 11 per cent of freight emissions nationally, despite moving 58 per cent of national freight task.

Existing policies to support greater use of rail recognise the significant and immediate emissions reductions that can be achieved through modal shift. This will be particularly important as the NSW population grows. The anticipated 26 per cent growth in freight demand by 2041 will require greater use of rail to avoid increasing road congestion, noise and air pollution, and to maintain the liveability of greater Sydney and regional communities.

While the short-term decarbonisation benefits rail can provide are clear, the industry recognises the need to further reduce emissions to support the achievement of net zero targets in the transport sector. Close collaboration between industry and governments to develop and progress clear decarbonisation pathways will be an essential part of this process. As part of this, there is an urgent need to harmonise environmental regulation and approvals to reduce differences between jurisdictions, and support greater coordination on decarbonisation measures.

The adoption of new technologies

Rail traction is the single biggest source of greenhouse gas emissions in the rail industry, with freight locomotives generally powered by diesel. While the electrification of the network has provided opportunities to support decarbonisation for metropolitan passenger services, it is anticipated alternative technologies will be required for rail freight. A number of trials for solutions such as battery electric technology and hydrogen technologies are underway in Australia and overseas. However, there is currently no single technology commercially available in the Australian market that would enable rail to phase out the use of diesel traction. It is anticipated that a phased approach to emissions reduction between now and 2050 will be required, including:

- **Improved energy efficiency and productivity solutions** to reduce emissions in the short term;

[14] Australia's emissions projections 2022, DCCEEW, December 2022

- **Transitional solutions** such as biofuels, renewable diesel and bi-mode locomotives, including battery electric or hydrogen solutions, with the ability to run on overhead power where available, in the short to medium term;
- **Alternative propulsion solutions,** such as battery, hydrogen and other zero emissions alternatives as technology trials are completed and these solutions become commercially available in Australia.

The average asset life of rollingstock is 25-30 years, and it is estimated that half of Australia's fleet may need to be replaced in the next eight to 13 years. There is therefore an urgent need to implement policy changes to enable the efficient transition to a decarbonised fleet now, particularly given some of these technologies are yet to be proven and commercially available within Australia. National and state net zero strategies generally prioritise decarbonisation of the road sector given the significantly higher contribution of road vehicles to overall emissions. While this is appropriate, a sole focus on the road sector in the short term would result in the loss of opportunities to significantly reduce rail freight emissions for decades to come.

The ARA has engaged with industry and government stakeholders in the development of its soon to be released Rollingstock Decarbonisation Critical Path. The project has identified clear recommendations to support the rail industry's transition to low and zero emissions technologies, including:

- Establish a shared, national vision and long-term plan to support the industry' transition to net zero;
- Ensure nationally consistent regulation that is fit for purpose;
- Explore funding for collaborative research and trials into new technologies, and to assist the industry in scaling up once technologies are proven;
- Ensure enabling infrastructure to support new technologies is available, particularly with regard to access to charging infrastructure and renewable fuels supply.

These actions will require collaboration between government and industry to ensure a harmonised, nationally consistent approach to the rail freight sector's transition to net zero.

> **Recommendation: TfNSW contributes to the development of a shared national approach for governments and industry to support the decarbonisation of rail freight operations.**

Energy infrastructure and fuels

Access to sufficient and reliable supply of affordable renewable energy will be key to supporting the rail freight sector's decarbonisation efforts. The scale and location of renewable energy infrastructure needs to be aligned with existing and future rail networks. Certainty in the consistency of energy supply will be essential to ensure the widespread uptake of new technologies, including battery-electric solutions.

Collaboration is necessary between government, the energy sector, rail managers and network operators to identify suitable locations for electrification, charging and fuelling facilities. Energy infrastructure needs to be targeted and aligned with predicted demand in the freight sector, and strategic land use planning will be necessary to support this.

Consideration should also be given to renewable energy sources that can be generated on rail infrastructure land, particularly at intermodal facilities and in regional locations.

Biofuels and renewable diesel

While biofuels remain a good short to medium term solution to decarbonise rail operations, increased supply will be required to support their widespread adoption in the freight industry. Biofuels and renewable diesel are also generally more expensive than traditional diesel, and consideration should be given to measures to reduce this cost to ensure rail remains cost competitive as it adopts more sustainable solutions.

Electric charging infrastructure

With battery electric technology trials currently underway in Australia, it is likely this solution will be an important part of the rail freight sector's pathway to net zero. Appropriately located charging infrastructure, linked to renewable energy, will be essential to support the adoption of these technologies. With the transport sector likely to be a high user of renewable energy, particularly in regional centres, there are opportunities to consider the location of charging facilities along the freight network, maximising efficiencies for freight operators and providing additional co-benefits for the wider community on key routes.

Additionally, consistent national standards for technology enablers, such as the charging infrastructure for battery electric locomotives, will support the efficient rollout of new technologies in the rail sector. It is recommended that measures are explored to ensure universal charging stations can be implemented to meet rail freight sector's needs, preventing a reliance on proprietary solutions that may otherwise differ between rollingstock models. This will maximise the use of charging infrastructure deployed and reduce the risk of facilities only being able to serve particular models or operators on any one section of the rail freight network.

Hydrogen and other alternative fuels

Hydrogen is expected to provide a long-term solution for decarbonising rollingstock in Australia. Trials for these technologies have largely been completed overseas, in part due to the limited hydrogen market currently available in Australia, as well as the current high cost of hydrogen that is available. Greater certainty around forward planning for hydrogen supply to ensure sufficient volumes, appropriate fuelling locations, and affordable pricing, is required.

The ARA notes the NSW Government's commitment to Renewable Energy Zones and the establishment of a hydrogen refuelling network along the Hume Highway for road freight services. Long-term forward planning that considers the needs of the transport sector as demand and competition for renewable energy sources increases is welcomed. However, it is important that rail is considered within this mix, and that industry has certainty about future supply to enable trials of new technologies now.

Recommendation: NSW explores opportunities to develop renewable energy infrastructure along rail freight corridors to ensure certainty of supply for the industry and deliver co-benefits to communities.

Environmental regulation

Across jurisdictions, there are significant differences in environmental regulation and approvals. When travelling through states, and sometimes even within jurisdictional boundaries, operators must comply with specific environmental law and regulations. Environmental regulation is not adequately informed by expert knowledge of the rail freight industry and does not sensibly consider the negative externalities of regulatory responses to poor performance.

It could potentially be improved with revised governance arrangements to create the necessary incentives to achieve greater alignment of environmental standards and accompanying accreditation processes across jurisdictions.

Unfortunately, available technology for emissions mitigation on existing locomotives are prohibitively expensive and often difficult if not impossible to retrofit successfully. Even if new technology of this nature was available, uptake would be limited by several factors, including: the fact any locomotive to which it was fitted would be considered a whole new piece of equipment for accreditation purposes; environmental issues associated with refuelling and in-line fuelling; low axle load lines which require older locomotives to operate; existing network characteristics such as structure profiles and low axle loads will likely limit uptake of batteries or other technology solutions under development overseas.

In NSW, rollingstock operators are regulated under the Protection of the Environment Operations Act 1997 (POEO Act) Environmental Protection License (EPL) scheme. Rollingstock Operator EPLs are intended to provide a flexible regulatory mechanism to drive a reduction in the impacts of the NSW operational rail network over time, with an emphasis on exhaust and noise emissions.

The inherent societal and environmental benefits (reduced congestion, emissions intensity, noise and improved air quality) associated with increasing rail mode-share are demonstrably significant. However, a sustainable uplift in rail mode share will require an ongoing, holistic and collaborative approach to addressing environmental externalities, such as rail noise in sensitive settings.

This contrasts with the current regulatory framework that tends to consider rail environmental performance in isolation. A typical response for concerns created for the EPA by a given locomotive's emissions is to defect the rollingstock and require maintenance, resulting in the immediate transfer of all volumes from rail to road, a significant net worsening of environmental outcomes.

These policy and regulatory settings place much of the onus on rollingstock operators to invest in solutions to issues that are multi-faceted and often exacerbated by ageing infrastructure and urban encroachment on rail freight corridors. Notably, road freight participants are far less exposed to costs associated with social and / or environmental externalities which can contribute to a reduction in rail cost competitiveness per tonne of freight moved.

Improved ties between relevant government agencies, rail infrastructure providers and rollingstock operators regarding rail-related noise in sensitive areas along key freight corridors would support efficient and targeted allocation of resources to address long-term issues associated with rail infrastructure.

Recommendation: Consider opportunities to advance harmonisation of environmental regulation as it relates to rail freight across jurisdictions, ensure it is adequately informed by expert knowledge of the rail freight industry and appropriately considers the negative externalities of regulatory responses to poor performance.

Recommendation: Alongside improved efficiency, decarbonisation and infrastructure resilience, incentivisation programs should consider measures that support a reduction in environmental externalities (e.g. clean air and noise). In NSW these elements are highly regulated, punitive and generally considered in isolation from the broader benefits associated with increasing rail mode share.